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The world's best smartphone revealed

Will Sony's new James Bond phone be a box office smash or a rotten tomato?



CYANOGEN

Hacker Zøne

Learn how to master the world's most exciting fork of Android

ORBITSOUND

SUPER SONIC. SUPER SVELTE.









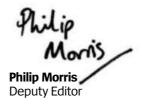
Welcome

With the amount of Android devices that get released every year, it can be hard to stay up to date. Manufacturers don't make it easy for us either, often selling multiple handsets at varying price points to make sure they have every corner covered. It makes it hard to judge exactly what is the world's best smartphone. Obviously, that's where we come in. This month we set out to complete the ultimate group test, pitting the 'big four' against each other. Turn to page 60 to find out what we've crowned as 2015's top dog.

We were also treated to five new devices from Google this month. It's always big news when fresh Nexus devices are announced and the Nexus 5X and 6P smartphones once again look like mouthwatering prospects. We preview these smartphones, the stunning Pixel C tablet and new Chromecasts over on page 6.

We've been hands-on with Android Marshmallow for a while now, for ever soaking in all the radical new features and subtle changes. As such, we thought it was the perfect opportunity to present you with our 30 amazing Marshmallow secrets feature. To become a Android 6.0 expert, head to page 20.

Hacking fans will love our complete guide to the Cyanogen OS, the exciting fork of Android, and we also give you our definitive verdicts on Sony's Xperia Z5 and the Samsung Galaxy S6 edge+. Enjoy the issue.





MEET THE TEAM

What new Google device are you most excited by?



Philip Morris Deputy Editor

I loved my first-generation Chromecast and the new Chromecast Audio looks like an essential impulse purchase for anyone who hasn't joined the Bluetooth revolution yet.



Jamie Frier Staff Writer

Having had a play with both new smartphones in the Nexus range, I'm definitely more excited about the Huawei 6P. The battery is a monster and it looks absolutely amazing.



Adele Jordan Production Editor

I'm looking forward to the release of the Nexus 5X as it promises to be a premium handset with excellent specs and a great camera at a more mid-range price.



Adam Markiewicz Senior Designer

Google's new Pixel C tablet surprised us all at the launch, but I can't wait to see how it compares to the iPad Pro or Surface. It could genuinely replace a laptop for many users.

GET IN TOUCH

What do you think? Let us know!



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Drop us an email and let us know what







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Watch us get our hands on the new Honor 7 smartphone

Expert video guides to follow along with this issue's tutorials

Stunning backgrounds for phones, tablets and Chromebooks

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GOOGLE'S NEW GENERATION

The revamped line-up includes two stunning phones, a tablet-laptop hybrid and two new Chromecasts. Here's everything you need to know





New Nexus devices are big news in the Android world. They are Google's idea of what an Android device should be in terms of design, specifications and features. The announcements help to shape the mobile landscape, informing manufacturers and developers how Google envisages the following year.

This time around we have got much more than we bargained for. We expected the two new phones that arrived, the LG Nexus 5X and the Huawei Nexus 6P, but Google has also announced a new 10-inch tablet, the Pixel C, and updated its hugely successful Chromecast range.

Google's Nexus range has always been a playground for Android power users, balancing brilliant specifications and no nonsense hardware. This remains very much the case, but design has played a huge part in the new line-up and that was constantly referenced through the unveiling keynote. It would seem that Google has been listening to customer feedback too and there's a genuine sprinkling of charm as a result.

So what exactly is Google telling the world should feature heavily in 2016's Android devices? Firstly, both new phones feature cameras, which on paper, very much look the part. Not just in terms of megapixels, but the software involved too. That's more than can be said for what's gone before. Fingerprint scanning is onboard too and the next generation USB Type-C ports that offer quick charging and reversible connection are also included.

Google hasn't given up on the high-end tablet either. Maybe spurred on by the rumours of Apple's iPad Pro revitalising a somewhat stale market, Google handed development over to the team behind the Chromebook Pixel range and the result is surprisingly dramatic. It's a tablet-laptop hybrid when you buy the official keyboard with it. It's mightily impressive, as are the two, yes two, new Chromecast devices. It's like Christmas has come early. Turn over the page and soak up all there is to know about Google's new generation.





Nexus 5X

The 5X is the mass market Nexus with a slim design and a potentially amazing camera

After two years, the Nexus 5X is the belated successor to the fondly remembered Nexus 5. Built once again by LG, it retains many of the qualities of its predecessor – plus a few awesome new additions – although it now finds itself repositioned as a midrange offering. It's the mass market Nexus, if you will, compared to the spec powerhouse that is the Nexus 6P.

However, where it really matters the specs are the same. The camera with the larger Sony sensor brings the promise that these may be the first Nexus devices that are good for photography. Then there's the fingerprint sensor, branded as Nexus Imprint and the Sensor Hub, which enables apps to use the phone's sensors (for recognising motion etc) in an ultra low-power mode.

The battery is more than 10 per cent bigger than on the Nexus 5 and coupled with the power usage improvements in Marshmallow it ought to get through the day comfortably. The display measures 5.2-inch with 1080p resolution.

Some users are disappointed by the Snapdragon 808 CPU, 2GB RAM and 16GB storage in the cheapest option. The first two are unlikely to be an issue, but a 16GB device with no storage card slot is hard to recommend.

66 It now finds itself repositioned as a midrange offering 99

Technical specs

»Operating system	Android 6.0 Marshmallow		
»Processor	Qualcomm Snapdragon 808, 1.8 GHz hexa-core 64-bit, Adreno 418 GPU		
»Memory	16/32GB storage / 2GB RAM		
»Dimensions	147 x 72.6 x 7.9 mm		
>> Weight	136g		
»Display size	5.2-inch		
»Display resolution	1920 x 1080 pixels (424 ppi)		
»Front camera	5MP		
Rear camera12.3MP			
»Connectivity	LTE Cat 6, Wi-Fi 802.11 a/b/g/n/ac 2x2 MIMO, dual-band (2.4 GHz, 5.0 GHz), Bluetooth 4.2, NFC		
>> Expansion slot	N/A		

Fingerprint scanner

Branded as Nexus Imprint, the fingerprint scanner located on the back of the phone will unlock your device and then skip the lockscreen almost instantaneously



What is USB-C?

After several years with micro-USB as the standard connector for most mobile devices, we're now about to enter the USB Type-C era with the new Nexus devices leading the way.

USB Type-C (or USB-C) is a new form factor, not a new standard – the Nexus phones actually only support USB 2.0. But the form factor is perfect: for the first time a USB connector is reversible, so the days of fumbling around trying to figure which way up the plug should be are over.

More importantly,
USB-C wasn't designed to
live alongside larger USB sizes in
the way micro-USB did. It has been
designed to replace them. Pretty soon
every device will use USB-C (see the 12-inch
MacBook) and a single cable will connect them all. In
the meantime, of course, you'll need adapters to bring
your older gear more up to date.



Nexus 6P

The 6P is the new flagship device that's packed with cutting-edge specifications

The Nexus 6P, built by Huawei, is very much the flagship Nexus handset. There are no compromises on the specifications and the design has been refined. The body is almost identical in size to the iPhone 6s, albeit with a marginally larger screen and is built from aluminium rather than the plastic of the 5X. The display is a notch up in every respect: it's Amoled, has a high resolution of 518 pixels per inch and has Gorilla Glass 4 protection.

The processor is the newest version of Qualcomm's Snapdragon 810 so it shouldn't suffer the overheating problems earlier versions had, while 3GB RAM is more than enough to handle any task. Best of all are the storage options: 32GB is a more realistic choice for the base level, then 64GB and 128GB options are there for power users. Inevitably though, you will have to pay way beyond the going rate to double the storage.

Still, if you're happy with the larger size, the 6P is a hugely impressive handset.



Technical specs

»Operating system	Android 6.0 Marshmallow	
»Processor	Qualcomm Snapdragon 810 v2.1, 2.0 GHz	
	octa-core 64-bit, Adreno 430 GPU	
»Memory	32/64/128GB storage / 3GB RAM	
	159.3 X 77.8 X 7.3 mm	
>> Weight	178g	
	5.7-inch	
»Display resolution	2560 x 1440 pixels (518 ppi)	
»Front camera	8MP	
»Rear camera	12.3MP	
>> Connectivity	LTE Cat 6, Wi-Fi 802.11 a/b/g/n/ac 2x2 MIMO,	
	dual-band (2.4 GHz, 5.0 GHz), Bluetooth 4.2, NFC	
>>> Expansion slot	N/A	

How is the 6P better than the 5X?

The 6P is higher spec in a few ways: higher res screen, bigger battery, more RAM, faster processor and Gorilla Glass 4 screen, instead of 3.

The best of Nexus

Both phones sport two cutting-edge features that can compete with the best that Android has to offer



New camera

Both Nexus phones utilise brand new 12.3MP Sony sensors, with much-larger-than-average 1.55 micron pixels. This should produce better low-light shots, less noise and more detail. Coupled with Google's updated camera app, promising faster performance and improved colour rendition, the Nexus phones could finally compete with the S6, G4 and even the iPhone 6s for photography.



Imprint security

Nexus Imprint is the name of the new biometric security system on the Nexus phones. It's based on fingerprint scanners located around the back of the devices – just tap your forefinger on it and the phone will instantly unlock. Your fingerprint is encrypted and stored locally on the device in a protected area of memory. It is not sent to Google or stored in the cloud.



Pixel C tablet

This iPad Pro rival combines an Android tablet and a laptop into one single device

The likelihood of Android and Chrome OS merging into a single product is something that has been discussed for some time. It hasn't happened with the Pixel C, but it's hard not to see it as a step in that direction. Previous models in the Pixel range have been Google's attempt to add high-end finesse to the Chromebook line-up. This time the company has targeted the Microsoft Surface and the iPad Pro with a fully-fledged Android tablet/laptop hybrid. We've seen it with the Asus Transformer products, but the Pixel C goes much further.

The design is genius from the aspect ratio of the screen to the magnetic hinge that attaches the keyboard to the tablet. At the launch, Google demonstrated how you can hold the device upside down by the keyboard and the magnets were powerful enough for the tablet section not to fall off. This rigidness, without the need for a kickstand, one-ups the Surface by making the laptop usable when it's actually on your lap.

Full specs haven't been released yet, but the Tegra X1 chip has shown outstanding performance in benchmark tests, so the outlook is promising.

Perhaps the biggest challenge the Pixel C will have to overcome will be its high price point. As stunning as it may be, it's still an Android tablet at heart and high-end Android tablets have traditionally struggled. The Pixel C costs \$499 for a 32GB model and increasing the storage to 64GB costs another \$100. On top of that you need to buy the keyboard separately, adding \$149 to the total.

Technical specs

»Operating system	Android 6.0	
»Processor	NVIDIA Tegra X1 with Maxwell GPU	
»Memory	32/64GB storage / 3GB RAM	
»Dimensions	TBA	
»Weight	TBA	
»Display size	10.2-inch	
»Display resolution		
»Front camera	TBA	
»Rear camera	TBA	
>> Connectivity	TBA	
>> Expansion slot	TBA	

Screen ratio

Unlike most Android tablets the screen isn't 16:9 or 16:10. Unlike the iPad, it isn't 4:3. Instead the screen is 1.41:1 or the square root of two to one. This is the same as a piece of A4 paper

Stereo speakers

On each edge of the device are speakers. These promise high-quality stereo audio for when you are watching movies; this device isn't just for work

USB-C

The Pixel C is another device that is embracing the USB Type-C revolution. The single port can be found on the bottom left edge of the device

Keyboard

The keyboard is actually an optional extra that you need to pay for. It attaches via magnets, and is charged inductively by the tablet section when closed



New Nexus by numbers

1.55 µm the size of the pixels in the Nexus

19 mm the key travel on the Pixel C keyboard





5X and 6P, in microns

3450mAh

the size of the battery in the 6P — more than 10% larger than the Note 5

the number of Nexus phones

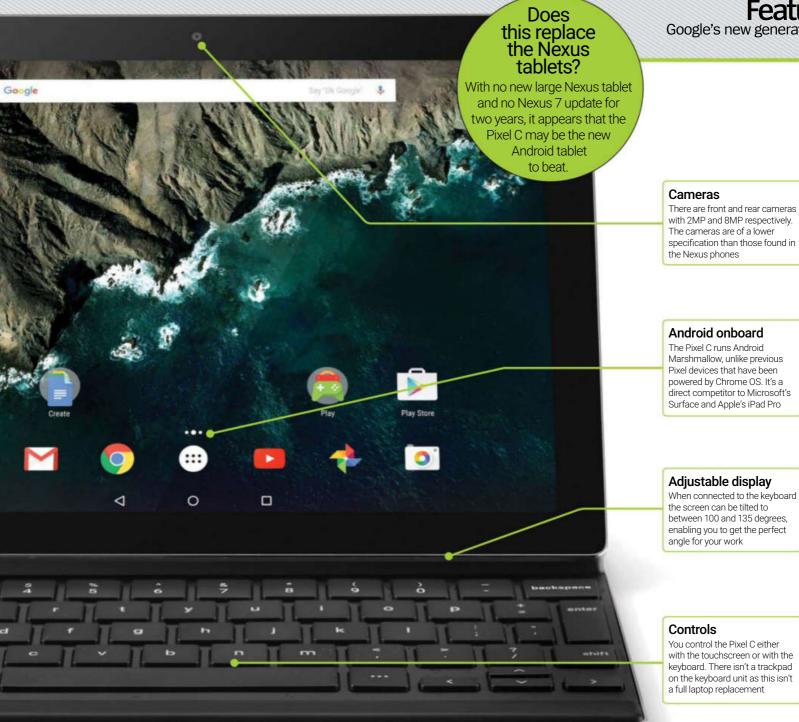
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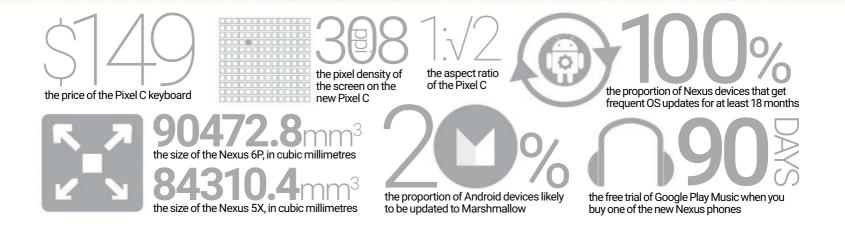
slow-motion video shooting available on the 6P

how much larger the 5X is compared to the Nexus 5

how long it will take to charge the 5X for four hours of usage and the 6P for seven hours







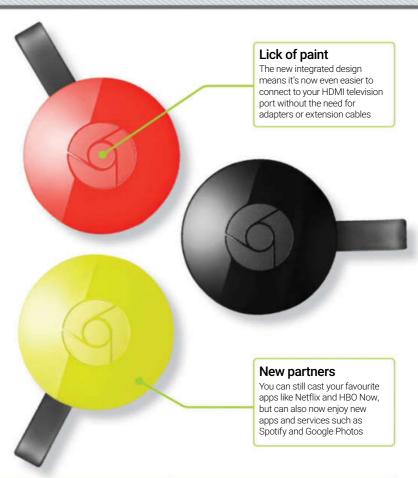


Chromecast

The original Chromecast has had a big upgrade of its own

If there's one piece of technology that has been universally loved over the last two years, you'd be hard pressed to find something as popular as the original Chromecast. Costing less than £30, this glorified USB stick plugged into your television's HDMI port and enabled you to cast entertainment content from your phone, tablet or computer to your television. This was achieved over Wi-Fi and therefore let you continue using your device as you normally would without any significant battery drain. Its small price point and ease of use saw Google sell millions of units. Somewhat out of the blue at Google's Nexus keynote, Chromecast 2 was announced with a new design and a host of new features.

The highlights of those new features are being able to experience higher video resolution and less buffering than before. The range of colours has also been expanded to include lemonade and coral as well as black. The new colours are bright, but the fact that it lives behind your television screen renders those changes a bit pointless. However, the main updates have been made to the Chromecast app, making it even easier to browse content across the apps you already have and explore the recommendations of others in no time at all. The app is now essentially a giant entertainment guide for movies, television and music apps. The app now lets you customise the backdrop of your television with images from Google Photos, Facebook and Instagram. The app is of course a free download from the Play store or iOS App Store.



Set up and use Chromecast Audio

01 Plug it in

Carefully unbox your new Chromecast Audio and plug it into your speakers. There's a 3.5mm jack cable that comes with your audio dongle.

02 Download the app

You need to grab the Chromecast app from your respective app store (Google Play or iOS App Store) to complete the simple setup and connect your devices over Wi-Fi.

03 Cast to speakers

Once connected, you simply tap the Cast button from any compatible mobile music app to instantly start playing on the speakers. Then use your phone as a remote.

Chromecast Audio Cast your favourite tunes to your speakers

If you've got a trusty pair of speakers that you've been using for over decade, you're going to love Chromecast Audio. If the Bluetooth speaker revolution has passed you by, Chromecast Audio will let you cast your digital library from your phone to your speakers. How does this work?

Well the new Chromecast Audio device plugs into your speaker's RCA, 3.5mm or optical port and acts as a way to stream music over Wi-Fi. It works in the same vein as the original Chromecast dongle, enabling you to cast music from almost any Bluetooth-compatible device (iPhone, iPad, Mac, Chromebook etc). Simply press the Cast button that appears in apps like Google Play Music, Spotify and Deezer (you can find a list of compatible apps at google.com/intl/en_uk/chromecast/apps) and fully control your speaker from anywhere in the house. Anyone can join in too, without any additional setup or advanced pairing. Best of all? It only costs £30.



RUARK MR1 SPEAKERS

One lucky winner will get their hands on a Ruark MR1 speaker worth £299/\$399



We've partnered up with our friends over at Ruark Audio to give you a mouth-watering giveaway of one of its best devices yet. The Ruark MR1 speaker positively shines in terms of its gorgeous design, hand-crafted build and superb sound quality, and we've got a pair of them to give away to one lucky reader.

The MR1 speakers will complement any audio product you may own. Whether you want to team it up with your Mac, use it to stream your favourite tunes from Google Play Music or perhaps even

implement it into your current television speaker system, the MR1 can do it all with ease.

Audiophiles out there will be pleased to hear that the MR1 speaker system contains a powerful 75mm woofer and a 20mm tweeter to help tackle the highs and lows in your songs, while the addition of a bass reflux has been hand tuned to provide a complete audio experience.

Excited? You should be! To be in with a chance of winning this MR1 speaker system, simply answer the following question:

What is the new version of the Android OS called?

- a) Marshmallow
- b) Maltesers
- c) Milk

Email your answer: A, B or C to qa@littlegreenrobot.co.uk with the subject: Ruark Comp before 30 November to be in the draw!



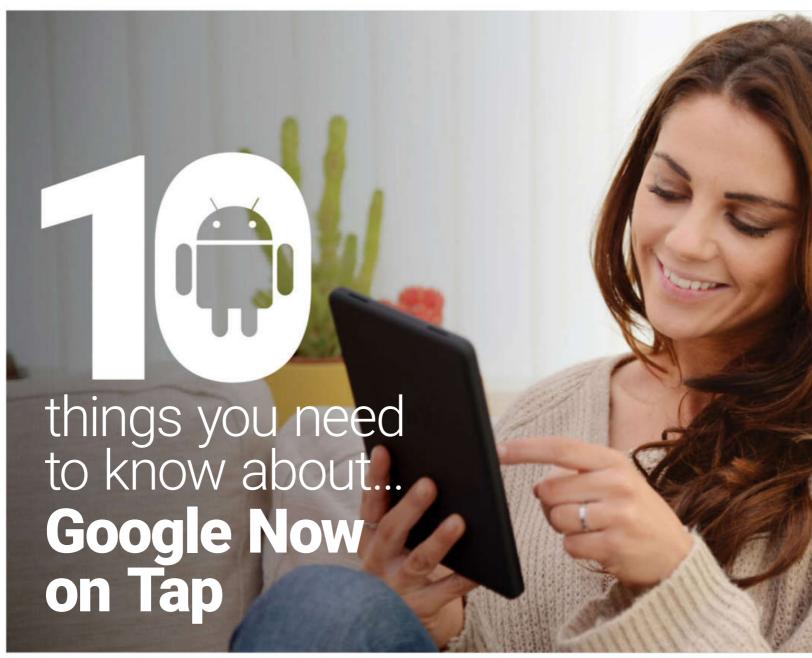




TERMS AND CONDITIONS

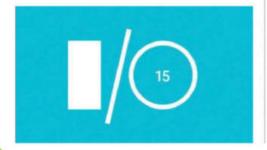
To submit your entry, email qa@littlegreenrobot.co.uk with your answer and the subject line: Ruark Comp. Please include your full name, age and address. The closing date for entries is 30 November 2015. Please be aware that entries must be submitted to the above email address only. This competition is open to residents of the United Kingdom and Ireland only. The prize is a set of Ruark MR1 speakers for one lucky winner. Imagine Publishing has the right to substitute the prize for a similar item of equal or higher value. Employees of Imagine Publishing (including freelancers), their relatives or any agents are not eligible to enter. The editor's decision is final and no correspondence will be entered into. Prizes cannot be exchanged for cash. Full terms and conditions are available upon request. From time to time, Imagine Publishing or its agents may send you related material or special offers. If you do not want to receive this, please state it clearly on your entry.





It's finally here!

After being unveiled at the Google I/O conference in May, Google Now on Tap has eventually got its first outing in the last developer preview before the general Android Marshmallow release. Google held it back from the first few 6.0 developer previews because it still wasn't quite ready, but they let it loose in September to properly test it. Although it still needs refining, it's great to see Google's intuitive search app out in the wild.



It's pretty smart

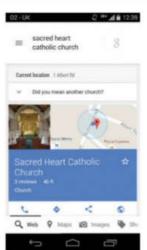
Google Now on Tap is part of a huge neural network that Google has been developing to make searching a lot smarter. Instead of merely picking

out keywords and performing a search based purely on them, Now on Tap will tailor a search based on its context, such as your location or the music you are listening to. This way you will have much more accurate search results and get the information that you need an awful lot faster.



It knows

what you're



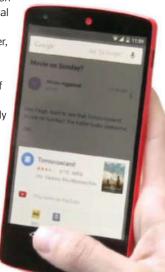
standing near and will give you its name. This will be useful as you now don't have to provide any information when asking a question.



It won't interrupt you

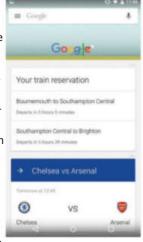
In the pre-Now on Tap days if you wanted to find the answer to a question then you had to head out of the app you were using, load up your browser,

search and then load the original app back up again. However, now search cards will load over the top of your current app so you only have to pull these up to see the information and then push them down again.



Keep your cards close

Those of you that love Google Now, never fear as that service still remains and your cards will stay one swipe away from your home screen in Marshmallow. Now on Tap is an addition to the service rather than a replacement, so you aren't going to lose your valuable interest and route cards. In fact, Now on



Tap should make the cards even more personal to you now that it is much better at learning things about you and your own habits.

Ok Google

Google Now on Tap has both on-phone and voice functionality. This means that it is able to bring up information whether you have highlighted a word or phrase on the page or if you've asked it a direct question using 'Ok Google'. This is really useful as it enables Now on Tap to provide information no matter what form the request takes, rather than



It uses ANN

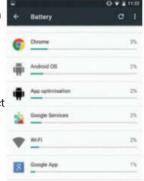
ANN is Google's Artificial Neural Network, the framework upon which Google Now and Google Now on Tap is based. This network is a compilation of all the information gathered by Google over the years. By pulling together strands of all the searches people have made using Google over the years, ANN is becoming more adept at understanding what people are searching for when they type in certain phrases. This knowledge is pumped into Google Now on Tap to provide more intelligent responses to questions.

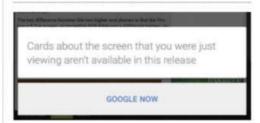


It will drain your battery

One downside to Google Now on Tap is that it will put a fair bit of demand on your battery. Now on Tap increases the amount of battery the Google

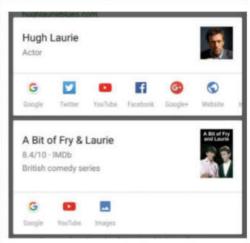
Play services use.
The fact that Now on
Tap has a lot of
analysis to do is
probably what is
eating up the most
battery life, but it
could also be the fact
that there are still a
few bugs to iron out
as it gradually
becomes optimised
for Marshmallow.





It isn't perfect

As with all new services, there will be teething problems. Google Now on Tap had a very limited public beta, only appearing on the final developer preview and even then it wasn't for very long. There will be gaps in its knowledge where it will fail to grasp what you're looking for, so you will need to be patient with it in the early days while the last few kinks are worked out of the system.



It isn't always listening

Privacy is a really hot topic, especially where Google is concerned. However, the Mountain View company has said that Now on Tap won't always be listening or reading all of your messages and webpages. Instead, it will only access your data once you've spoken to it or long-pressed the home button. It will then be able to read everything on your screen, but only once you have activated it and are presumably happy there is no sensitive information on screen.



NEW TECH | Customisable smart button

Flic: The Wireless **Smart Button**

Program one button to do all the tasks you don't want to do manually yourself

Flic is a button that is small, but mighty. It is only marginally larger than your fingertip, but it provides a wealth of options for controlling almost everything around you in your home.

You can place the Flic buttons nearly anywhere and then customise them to perform a range of tasks, such as turning on lights, taking photos or finding your phone. You can program up to three commands on each button, so you could place one Flic button by your front door and program its three options to turn on the lights with a tap, power up the television with a double tap and switch the kettle on with a long press.

You program it via an Android app and can change the commands as many times as you like with your phone. Another bonus here is that apart from changing the commands, it can work completely independently of your phone so you aren't stuck if you haven't got your mobile on you.

Flic is a really useful little gadget and the Android app is well designed so that you comfortably have a lot of flexibility when programming the button.

Flexible functions

The Android version of Flic currently supports around 50 different functions. However, if you set up IFTTT chains, this number can vastly increase

Bluetooth connected

Flic partners

Flic has partnered with Philips Hue lights, LIFX, WeMo, Logitech Harmony, Sonos,

Unified Remote, Spotify and a range of other home automation app companies

The Flic button will connect with the device it is controlling via Bluetooth Low Energy (BLE). This is the same source that smartwatches use to connect with phones

At a glance

- **Product name** Flic
- » Available from flic.io
- » Price \$34

A button that operates your home tech with a click

Stick Flic

Flic buttons can stick to almost every surface. However, it's not just restricted to a wall, it also has a clip that you can use to attach it to a belt. You could then use it as an emergency alarm





We spoke to Pranav Kosuri, the cofounder of Flic, to find out more about the Flic smart button

What inspired you to come up with the idea for the Flic smart button?

When my cofounder, Joacim Westlund, wanted to track his tobacco consumption, he developed an app for it. However, pulling out his phone and navigating through multiple apps to find the right one proved frustrating. That's where the idea to make a device that made it easy to trigger these functions came from. From there, Joacim, Amir Sharifat and I developed a concept for creating Flic.

Is it difficult to set up a Flic button?

You just download the Flic app then you push the button to pair it to your

smartphone, then you're all set to go. [It's] really quick and easy.

Is it possible to perform more than one action with each button?

Yes, you are able to trigger Flic in three different ways (click, double click and hold) meaning that you can have three different functions for your Flic [attached to each of these actions], but [these] can [all] easily be changed inside the app.

When do you hope the new 'Flic: The Wireless Smart Button' will be readily available to consumers?

The first 60,000 Flics that we sold during our crowdfunding campaign [are] being shipped as we speak. You can preorder Flic on our website at www.flic.io.

How long has it been in development?

We started more than two years ago. It's been a tough, but very fun journey and we are so happy that Flic is finally here!

What is the most creative use you've found for the Flic button?

Home automation products - like controlling your lights or your Sonos speakers - has gotten a tremendous response. A distress button is also very popular. But then we also have some quirky use cases suggested from our backers; like the button to dim the lights red and start playing the song Let's Get It On by Barry White. We have an open SDK that is available for all developers so we are sure that we will see a huge amount of use-cases emerging when they get their hands on Flic.















C Launcher Speedy Brief Launch

Although most launchers can be customised, few offer the option of mixing and matching each part of the homescreen. C Launcher lets you choose the wallpaper and the icons from a collection of themes.

» Price: Free

2 LINE Launcher

If you really want to get creative with your launcher, LINE Launcher (formerly dodol launcher) is the one for you. Not only are there thousands of wallpapers to choose from, you can also add lots of stickers to your device's homescreen.

» Price: Free

3 Smart Launcher 3

If you like your homescreen and app drawer attractively designed and well laid out, take a look at Smart Launcher 3. Set up your app preferences and see them displayed in a wheel before heading to your app drawer that's sorted by category.

» Price: Free

4 Total Launcher

The ultracustomisable
Total Launcher has a range of widgets for you to place on your device's homescreen.
These can all be shrunk or enlarged by hand, so your clock can be as big or as small as you want it to be.

» Price: Free

Z Launcher Beta

Although Nokia is no longer part of the Android family, its launcher certainly is. Z Launcher's headline feature, though very simplistic, is the ability to scribble a letter on the screen in order to make all apps that contain that specific letter appear.

» Price: Free

6 APUS Launcher

This has to be the most unique-looking app drawer on the Google Play store. While the launcher itself is standard, the app drawer is set out like a honeycomb. It looks bizarre at first, but if you value uniqueness then this is the way to go.

» Price: Free



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Everything you need to know about Android's newly polished operating system

Android Marshmallow has landed! After a year of struggling with Android Lollipop, users are now able to officially get their hands on phones that can run the latest OS. It's packed with immense features for preserving your battery life and privacy, as well as having support for Android Pay and the incredibly exciting Google Now on Tap.

As it stands, only users of the brand new Huawei Nexus 6P and LG Nexus 5X have the system preloaded onto their phones, while owners of a Nexus 5, 6, 7, 9 or Player have the option to update to Marshmallow.

Android 6.0 represents more of an evolution than the revolution revealed when Android 5.0 launched last year, but the changes made show that Google has been listening to criticisms of Lollipop and has reacted accordingly. The bugs and the fragmentation have gone and in has come Type C-charging, granular app permissions and standardised fingerprinting technology.

As such, there are many new exciting features dotted around the new operating system. Some will be extremely obvious to any user, such as the new app drawer that has

flipped 90 degrees to scroll vertically, while some are a little trickier to locate, such as managing your battery and RAM usage.

We have dug deep into Marshmallow to locate for you all the new tricks and features that will make this version of Android the most user-friendly and easily-customisable operating system yet. If you have managed to find anything that we may have missed, let us know via our Twitter account @lgrobot or our Facebook page by searching for Android Magazine or going straight to facebook.com/littlegreenrobot.

Get Marshmallow ahead of the rollout

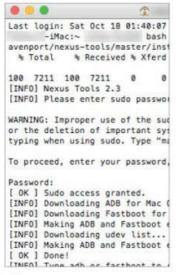
How you can enjoy Android 6.0 on your device before the official update

Despite the big announcement that Android Marshmallow is officially here, most people will still have to wait quite some time before the update arrives. However, if you have a rooted Nexus you can flash the Android 6.0 SDK onto your handset without too much hassle and enjoy all the benefits that Android Marshmallow has to offer ahead of the rest. Nevertheless, be aware that you could easily brick your device if you make a wrong move during this process so pay close attention.

"Enjoy all the benefits that Android Marshmallow has to offer"



Install Android 6.0 using the SDK





Download the Android M installer for your handset by visiting goo.gl/Gn9o7e. Then install 'Minimal ADB and Fastboot' from the XDA Developers website onto your computer. Next extract the installer files using a file archiver.



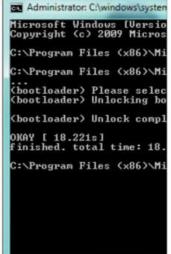
Become a developer

Make sure the files are TAR files. Move them to the same place that 'Minimal ADB and Fastboot' is saved. Tap Build number in your About phone settings seven times. Then open Developer options, enable USB debugging and OEM unlocking.



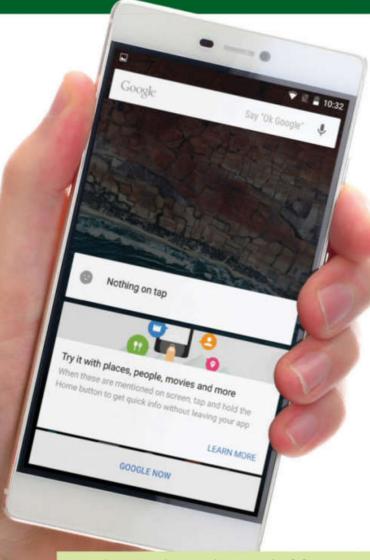
3 Enable USB debugging

Connect your phone to your PC and download the Google USB Driver. Extract the ZIP file, press Start>Devices>Printers, select your phone, choose Properties> Hardware>Device Functions>Properties. Enable USB debugging and tap Okay.



Flash your ROM

Back up your mobile then launch 'Minimal ADB and Fastboot'. Type adb reboot-bootloader and hit Enter. Then type fastboot oem unlock and press Enter again. Choose Yes, type flash-all and press Enter. Reboot and you should now have Marshmallow.



Master Google Now on Tap

We can finally say that Marshmallow's headline function has been released – this is how to make the most of it

It's contextually aware

The big thing about Google Now on Tap is how smart it is. You can ask it something as vague as 'Who is this?' and it will understand who you are referring to. This is called contextual awareness and draws on billions of Google searches.

Go hands free

You can either type in your question or ask it out loud with the familiar "Ok Google" opening. This means you can use this exciting new function completely hands free, which proves extremely useful. To type in your question, tap the Google search bar at the top.

Get instant information

Tap and hold the Home button when on a web page or email. This will overlay a Google search based on the words on the page, so you get instant information about whatever is on your screen without exiting the app. This search will appear as a little card.

Isolate keywords

If there are a number of potential keywords on a page, you can isolate the one you want. For example, if you see the name of an actor, tap and hold on their name to bring up a specific web search.

What looks different in Marshmallow?

Copy and paste Rather than appearing at the top of the screen as some tricky to decipher symbols, the copy and paste options now appear directly above the text as



words. making the whole process both easier and However, this currently only works for text you've typed.

Wallpapers

Each new version of Android brings a brand new range of wallpapers and themes, and Marshmallow is no different. You can access an



array of new wallpapers by tapping and holding any part of the homescreen or going to the Display menu in

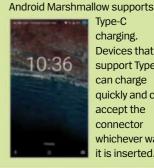
System UI tuner

Instead of revealing the System UI tuner by tapping on Build number seven times (which gained you access to Developer options) and then turning on



Show System UI, you now press and hold the Quick Settings cog. When you see a tiny wrench appear next to it, you have opened it.

Type-C charging If you've ever fumbled around with a micro-USB cable and put it in the wrong way round, you'll be delighted to learn that



Type-C charging. Devices that support Type-C can charge quickly and can accept the connector whichever way it is inserted.



Do Not Disturb returns

One of the most disliked features of Android Lollipop was the removal of a clear Mute setting. It became Interruptions, a name that confused people and the option itself just made no sense. Luckily, Google has heard of the disappointment and has seen sense. Consequently, Android M now comes with a Do Not Disturb mode for easier volume management.



Ditch the apps

It is now much easier to delete your unwanted apps. In all previous Android builds it was only possible to delete apps from inside your app drawer. However, Android Marshmallow will now give users the ability to uninstall an app straight from the homescreen. Tap and hold the app of your choice then Uninstall will appear at the top of the screen alongside a Delete option.

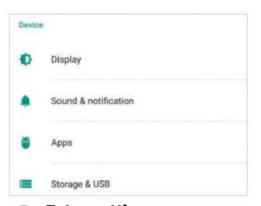
Personalise your app permissions

Permission denied! How to stop apps enjoying access to all areas of your phone

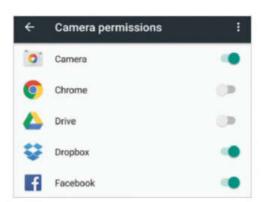
Security almost permanently occupies a place in the headlines of the Android world, not least because of the third-party apps that have the ability to steal your data or corrupt your phone. There is also the worry that companies such as Facebook are listening into your calls or reading your messages and that could stop you downloading certain apps. Android Marshmallow has now introduced granular app permissions that have the dual benefits of limiting the number

of permissions granted at download and making users more aware of what permissions they are granting. This means that if you don't plan to use voice typing, for example, then you don't need to give an app microphone access, whereas before Marshmallow you had to grant access to every part of your phone the app could need at some point in the future.

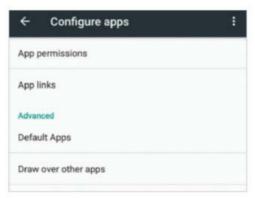
This quick tutorial will show you how to retrospectively deny apps access to your phone.



Enter settings
Pull down the Quick Settings menu and tap
on the cog. Scroll down the Settings menu until
you come to Apps. Tap on that to open up the
entire list of all the apps you have on your mobile,
including the ones that came pre-installed.



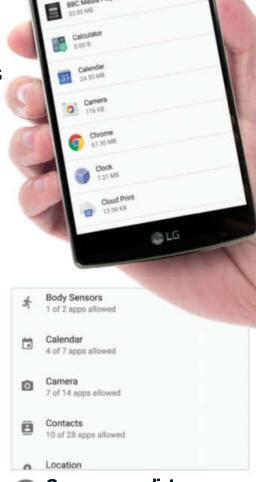
Deny permissions
Each of the apps will have a slider on the right-hand side of the screen. Tap a slider to deny that app permission to see the corresponding data. Remember this could impact on how the app works. Tap it again to grant permission.



Access app permissions
Tap the cog in the top right-hand corner of
the screen. This will bring up a range of advanced
app management options. Tap on App permissions
to see all the various areas an app could have
access to. Tap on whichever one you want to deny.



Target an app
Head back to the main app menu. Scroll
until you find a particular app and tap it. You will be
able to see a submenu entitled Permissions. It will
list all the areas of your phone the app has access
to. Tap that and hit the sliders to deny access.



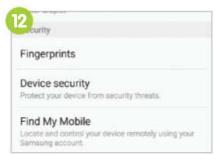
See your app list
You will see a list of apps that either
currently have access to an area of your phone or
could want access at some point. The apps you
downloaded prior to Marshmallow have blanket
permissions you had to accept before download.

	read calendar events plus confidential inform
	add or modify calendar events and send email.
Came	ra .
ø	take pictures and videos
Conta	octs

Detailed permissions
In the top right-hand corner of the App
permissions screen is a triple-dot menu. Tap this
and hit the All permissions pop-up menu. This will
display an in-depth explanation of what information
each permission will enable the app to see.

Get native fingerprint support

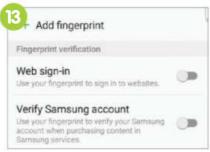
The fingerprint recognition in Android 6.0 has just got a whole lot better



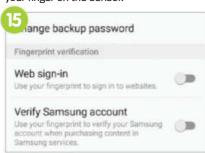
Open your phone's settings and tap on 'Lock screen and security'. Scroll down this list until you see Fingerprints.



Try and get as much of your fingerprint on the sensor as you possibly can. When finished, set it as your lockscreen.



Tap this and then hit Add fingerprint. You will then be prompted to repeatedly place your finger on the sensor.



In the fingerprints submenu, you can also set your fingerprint to sign in to various websites and buy things from the Play store.

Fingerprinting has been a feature of Android phones for several years now, but each manufacturer had their own system for recognising an individual's fingerprint. This made the whole system fragmented and meant it didn't work as seamlessly as it should. Android 6.0 has been updated to include native fingerprint support so all phones that run the OS should read your fingerprint in the same way. This will be of great benefit to users who will now be able to use their fingerprint for much more than just unlocking their handset. This is because the added security will mean Google Play store transactions can be made using just your finger.



Pay for goods with your phone

The new, cash-free way to pay with your Android phone is here

While Android Pay isn't a Marshmallow-exclusive feature, it is launching alongside it. The improved fingerprint support means that the use of fingerprinting technology to pay for items is now more secure than the fragmented mess it was before. Android Pay is the evolution of Google Wallet and is currently battling Apple Pay and Samsung Pay for supremacy in the mobile-payment market.

The way Android Pay works is very simple. Set up your fingerprint as shown above and install the Android Pay app. Add all your debit, credit and store cards and you are ready to go. When you go to pay for an item at a participating store, tap your phone on the terminal, press your finger against your sensor and the app will create a payment token. This way no personal card information is transferred to the seller. It is only available in the USA at the time of writing, but it should be on its way to the rest of the world soon.

Use Doze to save hours of battery life

Doze has already been heralded as a major success for Android users who want to keep more of their battery life for when they really need it. Doze shuts down all nonessential functions, such as scanning for Wi-Fi or processing Facebook notifications. When your phone is not being used, Doze kicks in and sends it into a deep sleep so the device is still on, but hardly using any battery. The only functions enabled to get through are priority alerts. Otherwise your mobile rests in an ultra low-power state until you need to use it. This innovation should hopefully banish the memories of Lollipop's frustrating battery drain issues and give Android users a much longer battery life.

More battery saving innovations

Doze isn't the only way you can extend the battery life on your Android phone. Here are three more excellent ways to keep tabs on your juice levels.

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Inactive apps

The submenu that appeared in the second preview build of Marshmallow contained nothing, much to the confusion of everyone. Now it is filled with your apps to show which of them are active. Tap an app to make it inactive and remove from standby.



Battery saver

This should be familiar for Lollipop users. Turn on Battery saver mode by tapping the triple-dot menu in the right-hand corner. This reduces performance, brightness and anything else that drains your battery.



Battery optimisation

Tapping on the triple-dot menu will also bring up the Battery optimisation menu. This is a list of apps that have optimised battery use. Tap on an app to make it work at full pelt.

Tripled battery life

Early tests of Android Marshmallow show the battery life tripling. Phones running Android 6.0 that were left on standby for 24 hours lost around 4.5 per cent battery, as opposed to devices running Android 5.1.1, which lost 12.5 per cent. This dramatic difference shows the instant impact of Doze

Set priority notifications

Make sure that your phone doesn't make the mistake of sleeping through your alarm while it is in its low-power state. Doze will wake up for specially set Priority notifications, which can be set in the Sound and Notifications menu found in your phone's settings

Power naps

Doze uses the motion sensors inside your phone to recognise when the phone is not in use. This unfortunately means that your handset won't enter Doze mode while it is in your pocket or bag, only when it's lying unused on a stable surface

Do not wake

There is a good chance that some of the apps on your phone have wake locks. These are commands to instruct your phone not to sleep so that these apps can process data. Doze overrides these so the handset doesn't keep waking up when it's trying to conserve battery

No input required

Doze is an automatic function that kicks in without you needing to activate or download anything. As soon as you have Marshmallow, you should notice an instant improvement in your battery life. Of course, this is as long as you aren't using the phone all of the time

How to get more hours out of your battery life with barely having to lift a finger



Return of the app

Android Marshmallow returns to the popular vertical app drawer

The last three major updates to Android have sported a horizontally scrolling app drawer that is split up over a number of pages. However, Google has decided to return to the long, vertical list of apps in the most recent version of the OS. This is a generally popular move and the new alphabetical order has made searching for apps that little bit easier.

22 Find the Easter egg



Head into your device's Settings by dragging down the top bar and then tapping the cog Scroll all the way down to About phone and



Find the Build number menu and tap it several times. This should take you back to the homescreen and a big marshmallow should slowly appear on the screen.



Tap on the marshmallow several times and then press and hold in the middle of the circle. You will now be able to play a ridiculously difficult game of Flappy Android

Search function

You can also find your apps quickly by typing in the search bar at the top of the screen. Your four most recently used apps also appear along the top row of apps

of Marshmallow the apps were separated by letter, consequently creating a longer and more clumsy app drawer. This was thankfully removed in the final version

Ice Cream drawer

The vertically scrolling app drawer was last seen on Ice Cream Sandwich, which was Android version 4.0. Around 7.5 per cent of Android users still run ICS or earlier



In an early developer preview



Enter your Settings and then tap on the Memory menu. From here you can see how much memory your phone has used within a given time frame.

Next, tap on the Memory used by apps submenu to reveal which apps have used the most memory so that you can take the necessary action to stop them running.

Memory statistics

Easily determine what is draining your battery

RAM management is a key issue for many Android users. Apps that are hungry for power will force your processor to work overtime and that demands a lot of RAM, which in turn gobbles up your battery. Offending apps need to be quickly weeded out and Android Marshmallow has made this a lot easier by tidying up the RAM drawer. You can now see at a glance how much memory has been used over a set period of time and which app has used the most.



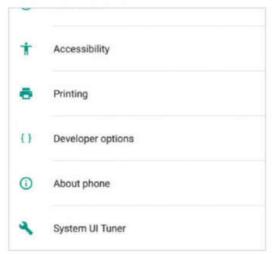
System UI settings

Modify your quick settings to get the most out of your phone by editing your System UI Tuner

Your quick settings are a shortcut to activating some of the most commonly used functions of your phone. However, you might want to change them around a bit or even get rid of some of the ones that you never use. This will result in a much cleaner and more efficient Quick Settings menu that only has the icons you want and need.

The System UI Tuner menu also enables you to delete certain icons from your status bar; for example, removing the icon that shows you if you are getting a 3G signal.

This tutorial will show you how to hack your quick settings and edit your phone's status bar to get the most out of your device.



Add tile Broadcast Tile Receitor lecked Cast

Access System UI Tuner

In Marshmallow you now access your System UI Tuner differently. Activate Developer options by tapping Build number seven times, then press and hold the Quick Settings cog. Head back into your settings, scroll to the bottom and tap on System UI Tuner.

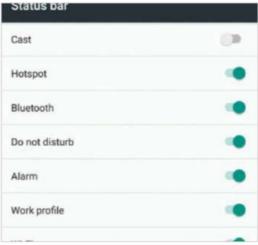


Add tile

Tap and press on an icon to reveal the Delete option at the bottom of the screen. Drag the icon to the tag and drop. Tap on Add tile to restore it as well as to include any other icons.

Switch icons

Tap on the Quick Settings menu option. Tap on an item, hold and drag it to where you want it to be. For example, you could move Do not disturb to the most accessible place for your thumb and less frequently used settings further away.



Edit status bar

Your status bar can sometimes get so filled with icons that it loses all meaning. Tap on Status bar in your System UI Tuner menu and tap on the sliders of the icons you don't want to appear.

Can you get more by hacking?

Whether it's things that were in the developer preview or those that never appeared at all, here is what we think is still missing from the standard, non-hacked Marshmallow OS

Dark theme

The dark theme for the app drawer was a very popular addition in developer previews, but was unfortunately dropped for the release.

Multiwindow

Samsung phones have had this feature for years and it is now available in Marshmallow, but it will take some hacking to uncover.

Momescreen

The landscape homescreen teased us in the preview, but has now mysteriously vanished. This would have been ideal for Android phablets.

29 Android Pay

Though it has now been launched in the USA, other countries can only see a frustrating wall in the Tap & pay settings.

👧 Delete bloatware

Bloatware is a major issue and, although major manufacturers have made a move to reduce this, native app deletion would be handy.



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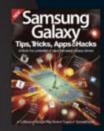














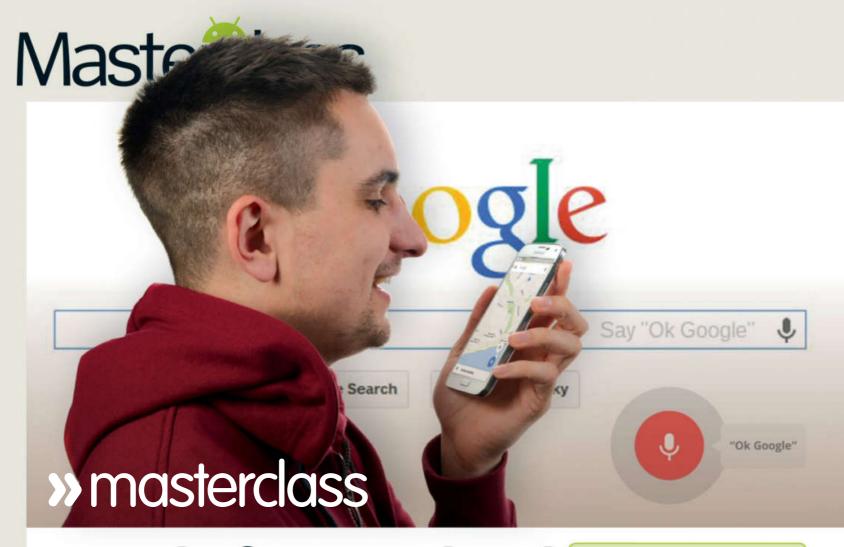








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Hands-free Android

Use these apps and tricks to get the best hands-free experience on your Android device

Oddly enough, some of the biggest advances in smartphone technology involve not actually touching your phone. New hands-free technology means you can talk to your phone to make it do things that you'd normally have to poke the screen for. Whether you're using your phone in your car or just can't be bothered to move and want to send a text, there will be something here of interest to you. A lot of smartphones have built-in hands-free functionality and Google Now is your new best friend when you want

to call out some orders. In this masterclass, we will show you some apps and tricks to ensure you're getting the most out of the technology built in to your phone, regardless of whether you're running vanilla Android or a third-party version. Nothing here is greatly time consuming or difficult and so long as you've got a basic knowledge of your device, you shouldn't have any problems. We'll also answer some commonly asked questions and ensure you've got all the knowledge you need to never touch your screen again.

More from Ok Google

Change your Google Now settings to get more Ok Google options

Change the voice language

The UK voice pack doesn't currently support some settings in Google Now, but you can change it to the US version. Go to the app's Settings>Voice, then change the language pack.



Set your pattern

Hit "Ok Google" detection, then turn on From any screen. Now you can use Ok Google from anywhere. As you've now changed your default, you'll need to re-record your voice pattern.



Turn on Trusted voice

Switch the toggle marked Trusted voice. You can now unlock your phone by talking to it. When the UK packs are set up you'll be able to revert back, but for now you're stuck with the US version.



Five things to know about voice functionality on your Android

1. Google Now trumps Siri

There are plenty of apps out there that offer a Siri-like voice assistant, but Google Now trumps them all in terms of great integration and ease of use. Plus it's free.

2. Microphone icon

Whenever you see the microphone icon, it means that particular app has voice functionality. You'll need to tap it to use it, but it's a neat little shorthand for checking what works with voice commands.

3. Learn the language

Making sure you're saying the right thing is often key to getting voice commands to work. Most apps will have a list of phrases in their help section so you can learn what you need to say and when you need to say it.

4. Disable when charging

One slightly annoying function of Ok Google is that it can wake your phone up when it's charging even if you don't want it to. If you're charging your phone in a public place, it's a good idea to turn that off.

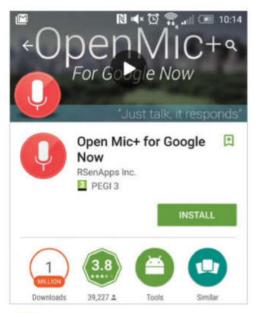
5. Google Now commands

A quick Google search will show you all of the Google Now commands you can issue with your voice. There's a surprisingly large number of them, from taking photos to finding out what bills you have to pay this week. There are even some joke ones to play around with.

Unlock with your voice

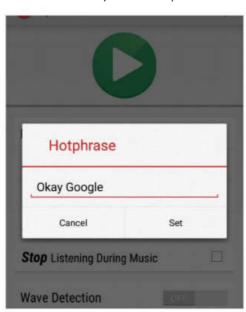
Use OpenMic+ to wake your phone with spoken words

If your version of Android doesn't include Touchless Control, Open Mic+ lets you wake up your device by saying a key phrase. It's super easy to get it set up and it's also a free download from the Google Play store. Here's how it works.

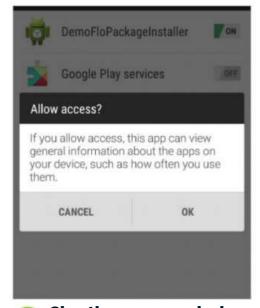


Get the app
First up, head over to the Google Play store
and download the app. It's a small download and it

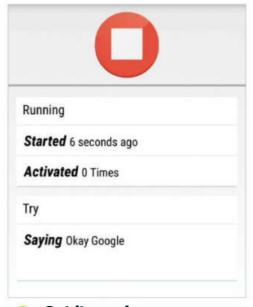
doesn't cost anything, but if you like what you see then there is a version you can download that donates some money to the developer.



Check the settings
The app will now show you a list of
settings. You can change the phrase you use to
wake it up by tapping the pencil button next to the
option. Check everything is set up the way you
want it by scrolling down the page.



Once you've installed the app, you need to enable some permissions. Follow the instructions on the screen and switch the toggle next to Open Mic+ to the on position. When you've done that, tap the back button to go back to the app.



Set it running

Now all you need to do is push the big

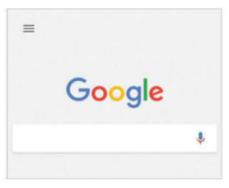
green play icon at the top of the screen. This will

set the app running and you should be able to say
your key phrase to wake up your phone and start
Google Now listening.

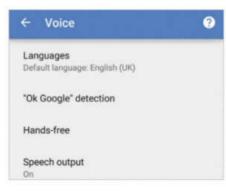


Swoop into the Google Now settings so you can use it with your headphones still plugged in

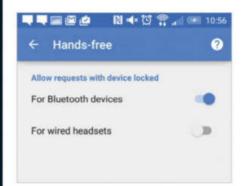
Google Now on your headset



If you like to use headphones with a built-in microphone, you can tweak Google Now to respond to your voice. Head to the app and open up the settings.



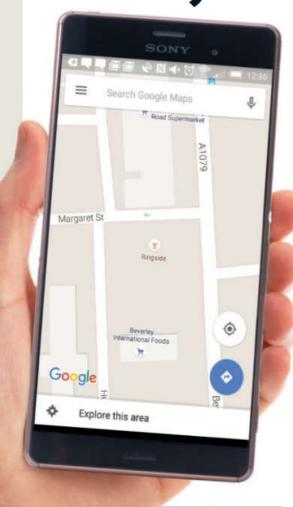
In the Settings menu, scroll down to the Voice settings and tap on them. From there tap on the option marked Hands-free. You should see a couple of toggle switches.



Swipe the one marked For wired headsets. Now when you plug in your headphones you can still wake your phone and give commands by saying "Ok Google".

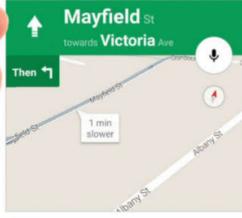
Masterclass

Navigate Google Maps Use voice commands in the With your voice Google Maps app to get you where you need to go



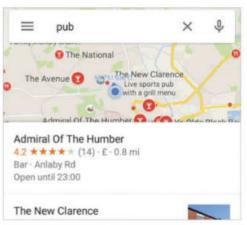
There are plenty of hands-free commands you can use in Google Maps, although some of them depend on where you are and what language pack you're using. If you've already switched to the US one using the tips elsewhere in this feature, then you should be good to go. This tutorial will walk you through some of the phrases you can use and also show you how to make sure that your phone will talk to you over Bluetooth (if you've got it connected in your

car to use as a GPS). You'll need the latest version of Google Maps installed on your device to make all of this work, and bear in mind that some of the functionality we're explaining is still in beta, so it might not work perfectly all the time. Unfortunately, you'll still need to tap the microphone icon inside the Maps app to get all of this working, so it's not completely hands-free, but hopefully that's something that Google is working on for the app's next release.

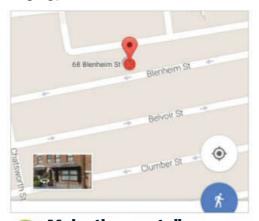


Open Maps

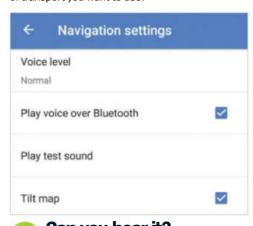
Open the Google Maps app on your Android phone. There should be a microphone icon near the top right of the screen. This is where you'll need to tap if you want to talk to your phone while it's giving you directions.



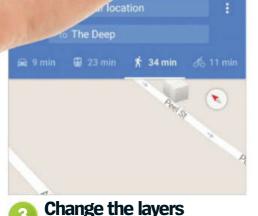
What can I say? Asking for "directions to" will let the app search for the quickest route from where you are to where you want to go. You're going to have to tap to select the route and which of the methods of transport you want to use.



Make the app talk If you're using the app as a GPS connected to your car's Bluetooth or if you're navigating a walk with a Bluetooth headset, you might need to check in the settings that the voice commands it gives are going to get through.



Can you hear it? In the settings, head to Navigation settings and make sure the check box next to 'Play voice over Bluetooth' is ticked. If the voice is too quiet for you, then you can change the volume in the Voice level option in the same menu.



There are other commands you can use when the navigation starts, including showing different layers of information on the app itself. You can find out more about them by checking the Tips & Tricks section in the app's settings menu.





Send a text message with Google Now

Use Google Now to send text messages from your Android device without typing

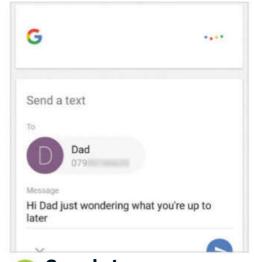
Now that you can wake up your phone by talking to it and ask it questions to get around, let's look at some of the other things you can do without your fingers. One of the most useful things is being able to type a quick text to a contact just using your voice. It works through Google Now and while it isn't yet the perfect service, once you get the hang of it you'll be speaking out your texts in no time. If you have Google Now installed then you're pretty much good to go. It's best to have the most recent version of the app, as it's unlikely that this will work on phones running anything before Android 4.1.



Wake up Google First, wake up Google Now with your key phrase. The first time you ask to send a message you'll need to give the app access to your contacts so it can send your messages to the right people. Give it permission and you're set.



Say what you want Next you need to tell Google Now that you want to send a text and who in your contacts list you want to send it to. It will fill in the requisite details and then take you to the next screen where you can speak out your message.

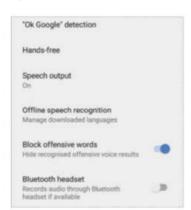


Say what you mean You can either tap the microphone icon or say "Ok Google" again to type out your text. When you're done just tap the send button and the app will do the rest. Remember to speak clearly and you should be fine.



More tips for Google Now

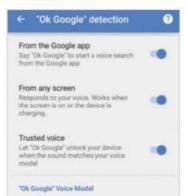
Play around with the settings to get a more personalised Google Now voice experience on your Android phone



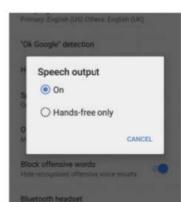
Play with settings Once you're comfortable with how Google Now works, you can have a play around with some of the settings to make it work even better for you. For example, if you like to swear in text messages, you can turn off the offensive word blocker.



Language packs You can also download extra language packs for when you're offline. US English will be installed automatically and you're likely to have downloaded UK English too, but there are plenty of other packs if you're multilingual.



Retrain Google You can retrain Google Now's voice recognition as well. This is handy if the app isn't picking up your commands very well. Make sure you're in a quiet room when you do it to minimise background noise that might interfere with your words.



Hands-free only If you don't want Google apps talking to you when other people can hear, you can set Google Now to only play back voice commands when you're in hands-free mode. This is especially useful if you want to double your phone up as a GPS.



App used >> AnTuTu Benchmark and AnTuTu Tester Works with >> Android 4.0 and 2.3 and up respectively

How to benchmark your Android device Find out just how fast your Android phone really is

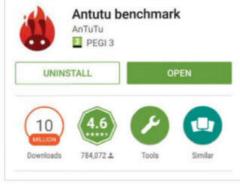


If you've ever ventured onto Android forums, you will have encountered benchmark tests. Benchmarks are the perfect way to measure a handset's speed.

Benchmarks consist of a series of tests that include executing mathematical equations, reading and writing data to memory, as well as rendering graphics. They are designed to replicate the tasks that smartphone hardware will encounter daily. They indicate the speed

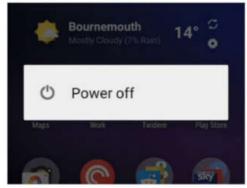
of individual components under various degrees of stress and can be used to identify bottlenecks or weak points in a system. More commonly, people like to use benchmarks to see how their device compares to others.

Benchmark tests are only meaningful when viewed in context with other devices and most apps compile a list of devices to provide that context. We'll be using the most popular tool: AnTuTu Benchmark.



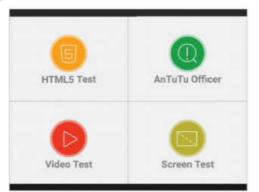
Get the app

Head over to the Google Play store and search for AnTuTu Benchmark. The app is free and works on all Android phones and tablets running Ice Cream Sandwich or later. It's only a few MB in size so you should be able to find room for it even on a low-end handset. Install the app to continue.



Prepare for the test
You want your device running at full speed

when performing benchmark tests. Therefore it's a good idea to ensure it is fully charged before you begin and keep it plugged in too. You should also reboot to free up as much memory and other resources as possible.



Choose your test type

Launch AnTuTu. The app supports a wide range of tests including HTML5 rendering and a test for your system's stability. See the panel on the right for more details on these. The main test that people use is for system performance including the processor and read or write speeds.



Get started and wait

Tap the massive Test button to begin. It's important to let the test run without touching the device or interrupting the app (although you can stop the test if you need to). The test takes around five minutes to run fully and you get a handy percentage meter to show you its progress.



Other tests

The AnTuTu Benchmark tests cover a number of areas. Most of them, such as I/O speed and multitasking performance, aren't terribly exciting. However, there are also tests of graphics performance that run short game-like sequences with graphics of varying degrees of complexity.



Test the speed of your phone with these other benchmarking apps

1 Geekbench 3
This app is cross-platform so you can compare your test results against your friends' ibhones

23DMark – The Gamer's Benchmark Designed for gamers, it tests your device's prowess playing 3D games.

3 Quadrant Standard EditionOne of the most popular apps out
there, although it can struggle with
the new multi-core processors.

4 GPU benchmark 3D Put your smartphone's graphics to the test. This comprehensive tool will work your GPU to the limit.

5 Speedtest.netThere's no point in having a fast smartphone if your network speed lets you down. Test it with this app.

Samsung GALAXY \$5 Xiaomi Mi 3 My Nexus 5: 37109 Google Nexus 5

How does it compare?
When the tests finish, you'll see a screen that lists your results in a chart alongside other popular modern devices. This enables you to see how it compares to the rest of the market. In our example, the Nexus 5 ranks as being slightly slower than a Galaxy S5, but slightly faster than an LG G3.



Share your results
Sharing your results is a big part of benchmarking, especially if you get particularly good or bad results. The Share button will enable you to quickly post the information to social media, but you can also take a screenshot and post that image to a forum or website.

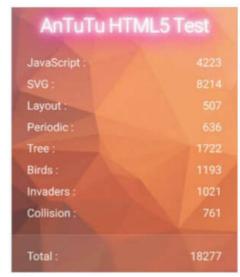
37109 Nexus 5			
UX	Multitasic Runtime:	4400 3873	
CPU	CPU integer: CPU float-point:	3513 3150	
CPU	Single-thread integer:	25 4 3 2319	

Performance breakdown
For more analysis of your results, tap the
Details button at the bottom of the screen. This
shows the results of each individual test. Sadly,
there are no comparison charts here, but by
comparing the numbers with other users you can
pinpoint a device's strengths and weaknesses.



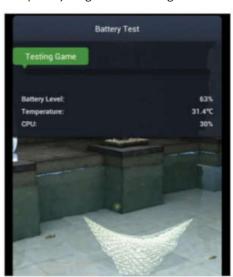
The test types in AnTuTu Benchmark

AnTuTu Benchmark has multiple types of tests available. Here's what you need to know about the main ones



THIML5

The HTML5 test benchmarks the device's performance when rendering HTML documents, as well as executing JavaScript functions. Though less important than system performance, it can be highly informative about the speeds you'll get when browsing the web.



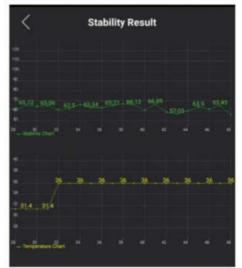
Battery

The battery test comes via a second app: AnTuTu Tester. It runs a series of hardware tests, including a battery stress test. The app plays through a series of tasks that replicate normal usage and then calculates the life of your battery. It takes a long time to complete as the battery needs to run down entirely.



Screen

The screen tests are a series of manual tests that enable you to check the integrity of your display. They include an LCD test that can highlight dead pixels and a multi-touch test that shows how many fingers can be recognised at the same time (on many devices this is ten).



Stability

The stability test is primarily a test of how well your phone holds up under increased temperatures (which can be an issue when gaming or shooting in HD video). It maps the standard test results against differences in temperature, enabling you to gauge how stable your system is.



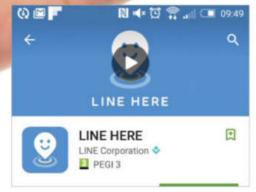
App used >> LINE HERE Works with >> Android 4.1 and up



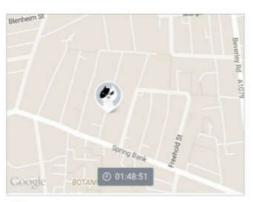
Track your contacts' location using The LINE HERE app lets you share your location with your friends and family

Organising a meeting with your friends and family was a whole lot easier with the advent of smartphones, but LINE HERE wants to make it even simpler. It lets you share your location with your contacts so that you can see where everyone is. It's an opt-in service and you only share your location with people you choose to. It's useful for keeping track of your kids as well and it doesn't

take much time to get it set up on your phone. You won't need any special skills or knowledge, but you will need either a Facebook or LINE account to get it up and running. We'll also show you how to use the timer function to only show where you are for a limited time. The app is free to download from the Google Play store and there are no hidden charges or IAPs.



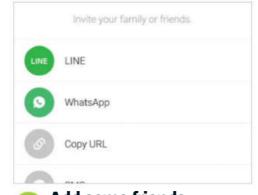
Get the app First up, head to the Google Play store on your phone and download the LINE HERE app. It's a small install so it shouldn't take too long. Once it's downloaded, open it. Here you'll be asked to sign in to one of two different accounts to get started.



Where are you? The main page will show you where you are. There are a few tutorial steps the app walks you through and it's a good idea to pay attention to them. When they're done, tap on the plus button. This is where you can add and find your friends.



Choose your account If you've got the standard LINE app installed then it's worth signing in with your LINE account to share your data across. If not, sign up with Facebook where you'll need to verify your sign in. The app won't post to your account.



Add some friends There are many ways to add your contacts depending on what's on your phone. If you've got friends using the LINE app then you can add them easily or you can also use WhatsApp contacts. Alternatively, send a text to invite people.



Select an avatar Now you're in, you'll need to select an avatar for yourself. You can choose your Facebook profile picture or one of the ones the app offers. Accept the terms and policies and then tap Next to get to the main screen.



Set a timer If you want to set a timer, tap the clock that appears near your location and then set how long you'd like to display your location. To turn off the service, tap the down arrow button on the main screen and then tap on the toggle button.

Apps used >> WifiMapper Works with >> Android 3.0 and up

Locate top Wi-Fi hotspot areas

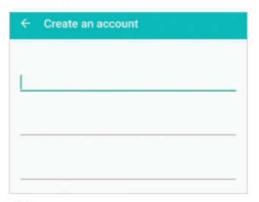
Use WifiMapper and find local places to hook up your handset

If you have limited data allowance, you are probably permanently on the lookout for free Wi-Fi hotspots. However, it isn't always obvious which public locations have free Wi-Fi so this search can be a frustrating one. WifiMapper is an opensource app that lists all the Wi-Fi hotspots in the local area. Users upload hotspots that they have

found and tell other users if the Wi-Fi is free, password-protected or private. As more users find the same hotspot, they can then confirm the initial data and a location can steadily build up a reputation as the number of people endorsing it increase and leave comments about the place.

This tutorial will explain how to use WifiMapper, find local Wi-Fi hotspots and add information to the app. It will also show you how to access your Wi-Fi history so that you can remember which locations had a particularly good or bad Wi-Fi signal.

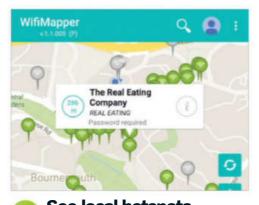




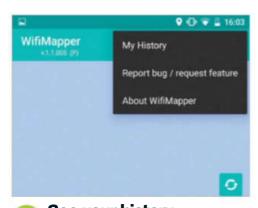
Set up your account Download WifiMapper from the Google Play store. After opening up the app, tap the person in the circle in the top right-hand corner. Either add your email address or sign in with Google+. Doing this will save your history for future reference.



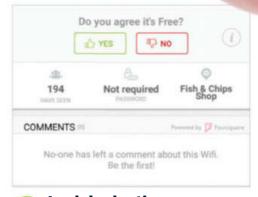
Add comments You can add comments about the establishment itself, such as food and service quality. Tap the vacant text box at the bottom of the screen to add your own comment. It may be worth mentioning the quality of the Wi-Fi signal.



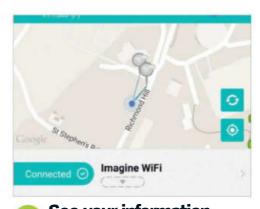
See local hotspots The homepage should quickly fill with lots of green lollipops to indicate places in the area that have registered Wi-Fi zones. If you can't see any, zoom out until they come into view. Tapping on a lollipop will reveal the name of the location.



See your history When in the homescreen, tap the menu button in the top right-hand corner. This will bring up the option to view your history. Tapping on My History will reveal all the places you've accessed via the app. You can order these in different ways.



Look in-depth Tapping on an entry will expand the bottom half of the screen and provide more information, such as the type of establishment and how many people have seen and verified it. If you have visited it, tap Yes or No to agree or disagree that it's free.



See your information Once you have located a Wi-Fi hotspot and connected to it, you'll be able to see it on the app - now shown by a white tick inside a blue tab. Tap the arrow on the right of the screen to see more information or to disconnect from the hotspot.



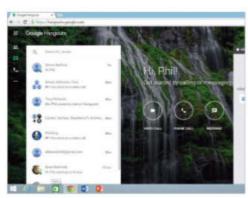
Master the new Google Hangouts for Chat with friends and colleagues via text and video using Hangouts



Superseding the problematic Hangouts app, the new Hangouts for Web desktop site (hangouts.google.com) gives you more features in a user-friendly interface. As before, Hangouts lets you chat with up to 100 people and enjoy video calls with up to ten participants for free. You can also call phone numbers using Google Credits.

The new Hangouts for Web portal makes it easier to access your settings. In addition, you only need a standard Google account to use Hangouts now rather than Google+, although you will need to upgrade to the latter to make use of the video call apps. It enables you to do some fun things during calls, such as on-screen drawing and YouTube-video playback. There are even special Hangouts games available to you!

In this tutorial, we'll show you how to make the most of the great features.



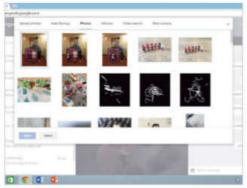
Start a chat

Clicking a name will start a chat with them in a new pane. However, if you haven't chatted with them previously, they haven't yet used Hangouts or have changed their default privacy settings, you'll need to send them an invitation first. Click Send Invitation.



Visit the site

Sign into Chrome and go to hangouts. google.com. The three main options enable you to you start a video call, phone call (using Google Credits) or message. Or you can click on a previous conversation in the left panel. Instead, let's click on the search field above it to look for someone.



Talk and send pictures

Once they've accepted your invitation, you can send each other messages as per usual. Tapping the bottom-right (mountains) icon lets you send a photo from your Google+ gallery. Do this by uploading an image or taking a picture with the webcam. You can also send links to online videos.



Search for someone

Type a name or email address into the search field. Results will be listed in the following order: contacts, circles, people in your domain, people on Hangouts and people not on Hangouts. Note that they'll need to have a standard Google account to show up in the list.



Pop it out

By default, your first conversation pane appears on the right of the main browser window. Subsequent chats may appear to the left of that one if there's enough space. To make more room, you can tap the arrow icon (at the top) to pop out a pane into a new window as shown above.



Tips for troubleshooting issues and making the most of Hangouts' many features

1 Adjust bandwidth
If you're experiencing video call
issues, try altering the bandwidth via
the top row of icons.

2 HD video call
To transmit HD video, you'll need a
quad-core CPU, HD camera and
1.2Mbps upload speed.

3 Receive phone calls You can make phone calls, but can only receive them if you have a (US-only) Google Voice account. 4 Computer-only apps
These apps aren't yet supported on
mobile devices, so it may not work
for some call participants.

5 Keep quiet or notEveryone's microphone is muted during YouTube video playback.
Hit Push to talk if you want to chat.

The property of the control of the c

Add more people
Clicking the person + icon at the top of the messaging window will enable you to add contacts or invite other users for a group chat. Just search for them as before. If you were only talking to one person previously, this will result in a brand new pane for the group conversation.



Switch to video
During a chat, you can click the video
camera icon at the top of the pane to start a video
call. This brings up a new browser window. When
they answer, you'll see their video feed in the main
view with your own webcam view in the bottomright inset. Click it to switch views.

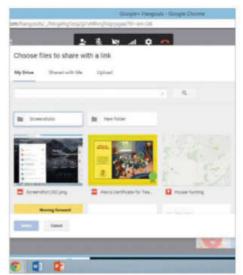


Video call options
Moving your mouse over the window will bring up options including disabling the webcam and muting the microphone. You can invite extra people using quiet mode to avoid ringing their device. On the left are options for chat, screen sharing and, if you're a Google+ user, apps.



Advanced video call options

Numerous video call options available in Hangouts includes the ability to share both your screens and YouTube playlists



Text and share

It's possible to chat via text during a video call. First hover the mouse over the video call window to bring up the options. Clicking the top-left chat icon will bring up a text-chat pane on the right of the window. You can paste web links here and click the Drive icon to share files.



Draw and effects

The Draw option (pencil) enables you to draw on the screen, as well as add various stamps and type text. It's good fun, but could also prove useful for annotations to explain something. The Effects tool lets you add headwear, facial hair and so on, that can all be made to follow the curve of your face.



Screenshare

The Screenshare icon enables you to share your entire screen or a selected window. A 'present to everyone' option makes you the main view for everyone. You can select the same from a drop-down menu on any thumbnail to make that person the main presenter.



YouTube and other apps The YouTube app lets you create a video

playlist to be seen by all call participants. This means that adding and skipping videos will affect everyone in the video call. Hold the 'Push to talk' button to talk to friends. To find more Hangouts apps, hover over the '...' icon on the left and click Add apps.



Apps used >> X-CPU Widgets Works with >> Android 4.1 and up

Manage your device's pover usage Use X-CPU Widgets to check your essential power statistics

Set up widgets

Press and hold on your

phone's homescreen to get the option to add widgets to

> CPU usage, RAM usage, current battery remaining and the phone's temperature

X-CPU Widgets is an app that adds widgets to your homescreen in order to display your device's current CPU, RAM, battery and temperature statistics. This is a useful addition to have on your homescreen as sometimes your phone slows down and you're not entirely sure what has caused it. Rather than having to delve into your Settings menu in order to see what's happening, the widgets give you instant information that can show you what part of your handset is causing the lag so you can solve the problem. In the free version you are able to set one floating widget to stay on your device's screen permanently, while the paid-for version lets you enable four widgets.

This tutorial will show you the best features of the X-CPU Widgets app and how to benefit from them.

"Display your device's current CPU, RAM, battery and temperature statistics"

Monitor your usage The turquoise circle shows

your CPU usage; the blue one shows how much RAM is being taken up; the orange circle shows the battery percentage, while the red one shows the current temperature of the handset

Change size

Long press on a widget once it's on your home page. This will bring up a white box around the widget that will enable you to alter the size of each individual circle. This can help you highlight the particular statistic you usually

How to edit your widgets

If you want your core features to look a little more vibrant, you can jazz them up a bit



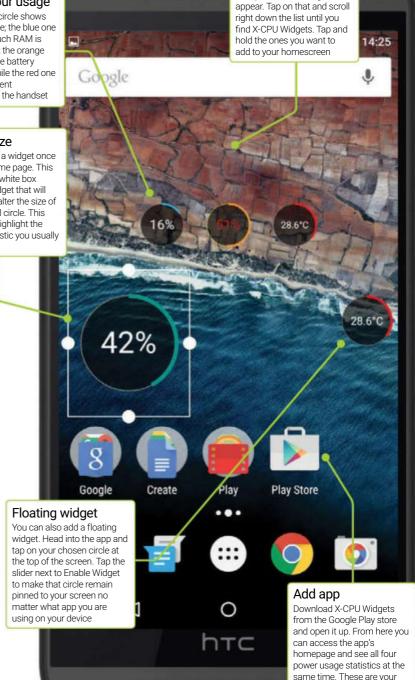
Open the app



Change colours



Check your colour scheme



Apps used >> Dreamify **Works with >>** Android 4.1 and up

Create Deep Dream images with Dreamify

Use the Dreamify app to make weird and wonderful photos

Deep Dream is the name for the bizarre results of Google's Artificial Neuron **Network (ANN) experiments.** By showing this network millions of images, Google hopes to make the searches made via its search engine much more accurate. However, the system has thrown up a massive unforeseen curveball, seeing faces, animals and swirls where none existed before. Google made this software open source and that has led to the Dreamify app that puts your photos through the Deep Dream experience and returns you its strange results. The fact that there are apps that do all the legwork for you is great. This tutorial will show you how to submit an image to Dreamify and what to expect when it returns.

"Seeing faces, animals and swirls where none existed before"

Set your presets

Download and open the app. Make sure you are in the Dreamify submenu by tapping the camera icon in the top left-hand corner. From here you can scroll through the preset options and choose what kind of filter you want applied to your picture

Manage your Dreamified images

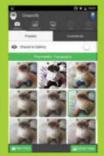
Once you've selected the image you want to put through the Deep Dream filter, tap Add. Hit the My Images folder at the top of the screen to see your submitted pictures. Images that have been Dreamified will appear in the Completed folder

See other images

Tap on Gallery at the top of the screen to see a selection of recent images that have been uploaded and Dreamified. Unfortunately, there doesn't seem to be a way to make your images private from the gallery list, so be careful what you submit

Filter your photos

Decide how you want your Deep Dream images to be altered so that they can be as similar or different to the original as possible



Preset options

There are currently 12 preset options for your Dreamified images. This is where you tell the image creators what kind of alterations you would like them to make to your photo. You are only able to choose one per image, but you can submit multiple pictures.



personal settings

If you want to do even more experimentation, you can play around with the sliders to change the levels of the various alterations. You can increase or decrease the saturation of the extra swirls and images to a level that suits you.



Add your setting to the gallery

If you want your new customised Dreamify setting available to anyone else who uses the app, tap the 'Shared in Gallery' option and it will then be added to the list of available options. Tap it again to keep it personal to you.

View the photo

Tapping on the completed image will show you the original photo. Tap it again and it will return you to the Dreamified picture. This can look quite different from the original. For example, the picture shown here of a lamp used to be a rabbit

☑ Share/Save

Prismatic

Submit your image

There's a green box in the bottom right-hand corner that you will need to tap in order to upload an image from your gallery. Scroll through your photo gallery to find the one you want or, alternatively, click the box in the bottom left to snap a new photo

September 22nd 2015, 12:15 pm

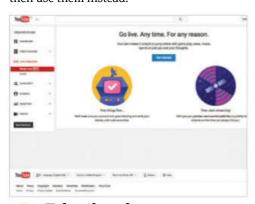


App used >> YouTube Gaming Works with >> Android 4.1 and up

Share your gameplay on YouTube

Use Google's new game streaming service to show off your Android skills

Google has released its Twitch-competing game-streaming service: YouTube Gaming. If you're not familiar with the concept, basically you can watch live streams of people playing games and often squawking at them like over-sugared children. But what if you want to stream Android games on the service? You'd think it'd be a simple process, but unfortunately the YouTube Gaming app doesn't just have a button to stream your gameplay to the masses. Instead, you're going to need to jump through a few hoops and you'll need a computer close at hand as well. It's not the easiest way to do things and we expect there'll be native Android streaming coming in future updates, but for now this is the best method. You'll need to know how to cast your Android device to your PC for this to work. We're using the Mobizen app and a USB cable, but there are obviously other methods to get your device's screen on your PC, and if you're already familiar with those then use them instead.

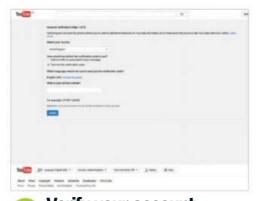


Take the plunge
There are a number of steps you will have
to follow to get your account verified, up and
running. The hoops you need to jump through
aren't massive, but unfortunately they can be a
little time consuming. Luckily, Google will walk you
through the process pretty comprehensively.

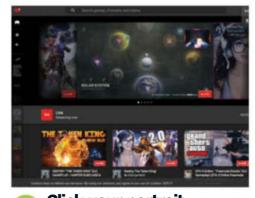




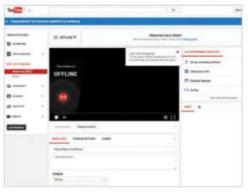
The first thing to do is get your YouTube
Gaming account set up. Head to gaming.youtube.
com while signed in with the Google account you
want to stream from. The landing page will show
you a popular stream and some other options, but
you can ignore that for now.



Verify your account
First you'll need to verify that you really are the person who's signing up to stream. There are a couple of ways to do this, but the easiest way is to send an authorisation text to your phone. Inside the text there'll be a code. Enter the code online in order to be verified.



Click your portrait
Instead, click on your portrait in the top
right-hand corner of the screen. You'll have two
options: Go Live or Upload Video. Obviously the
one we're interested in is Go Live. Click on that to
get things started. You'll now be taken to your
account page within YouTube Gaming.



Here's your dashboard Once you're verified, you'll be through to your dashboard. You might think that's the end of it, but it really isn't. There's a lot more to the setup that you'll need to get through before you can go live. Again, Google is pretty good at walking you through what needs to be done.



Some more quick tricks and tips to get a better stream

1 Use the right tools Chrome is the best browser to use for Mobizen, as is the usual way when it comes to Android software. 2 Can I bypass it? If you have a device that can screencast without this then you can bypass it all. 3 What's an Elgato? It's a capture device to help record gameplay. If your Android has an HDMI port, it's worth getting one. 4 Can I use Chromecast? Yes, but there are workarounds you will need in order to get it working. Have a search on Google. **5 Video in video** You can add your camera to the stream once you're more comfortable with Wirecast Play.



Follow the links

Click the link that offers a handy guide to get everything set up. From there, the first step involves downloading an encoding program. This is basically how YouTube converts what you're playing into a live stream. Click on the link to be taken to a list of options for you to choose from.



Pick the right one

For the purposes of this tutorial, you will need to grab the free version of Wirecast from wirecast.en.softonic.com. It's available either for PC or Mac and it isn't a hefty download. Once you have it installed, tap the button at the top of the screen that's marked Stream.

Name	Harry Stater Live Stream	
Breading	YouTube: 240p Recommended	B 0-
	Bysoglematicom Authoritate	
Evert.	Harry State: Live Stream (Default Channel) 📋 Est	You
		iou
		Tay.
Strate	536 %	
Location	dry its dry youlde contine to the resident to the	los
Stream Delay:	g seconds	

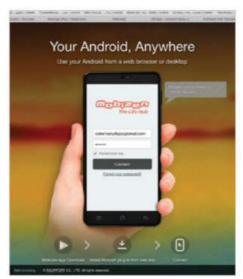
Sign in with your account

You should get a pop-up asking you to log in. Sign in with the same account you started the process with. The sections of the form should auto-fill once your account is associated with the process. It'll look a little something like this. Feel free to change the stream name.



Now connect your Android device

If you've followed the first steps correctly, you should now be ready to set up your Android device for streaming



Get the software

First you'll need to grab your phone or tablet, a USB cable and the 'Mobizen – Game, Video Recorder' app (free) from the Google Play store. You'll also need to point your PC's browser to mobizen.com. Sign in to the app then connect it to your PC with the USB cable.



The source of it all

Click the sources menu and choose 'New Local Desktop Presenter'. Rather than streaming your whole screen, you'll want to just stream a window. Click that option then do the same in the drop-down menu underneath. Next, pick which browser window your phone will be streaming to.



Make a screen

When your device is connected, click on the button marked full screen. This will display your whole screen in the browser window on your PC. Now it's time to add a source to Wirecast Play so that it will stream the content of your browser window.



Add the stream

In the Master Layer section of the main screen, hover your mouse over the plus sign then click on the image of a computer. Find your Desktop Presenter in the drop-down menu and click to add it. Next, click the stream button in order to go live. You should now be streaming directly onto YouTube.

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Hacker Zøne

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Get up to speed with all the terms you will need to know when it comes to hacking your phone

OS

Short for 'operating system'. Often the Android ROM will be referred to as the OS – this just means the system files on the Android device that make up your user experience, and is similar to Windows, Mac OS X or Ubuntu on a desktop computer.

ROM

Stands for 'read-only memory'. In the context of Android, the ROM refers to all the files that make up the operating system that is installed on your device. Gaining root privileges allows for replacement of the standard ROM with a custom one.

Root

'Rooting' your phone gives apps access to parts of the OS that are normally hidden from consumers. This enables you to run more powerful software and install custom ROMs on your phone.

ROM Manager

An app available from the Android Market that enables you to install a whole new version of your OS with a single click. It requires a rooted phone to use and is ideal for those new on the scene.

Titanium Backup

This app from Google Play enables you to back up everything on your phone – apps, data, settings and all. It means that you can restore your phone to how it was, even after you've updated or changed the ROM.

Unrevoked

Available from unrevoked.com, this is a one-click tool that can be used for rooting many popular HTC smartphones.

ADB

Stands for 'Android Debug Bridge'. ADB is mainly used for software development, but it also has some uses for hacking your phone. It can be used to push files onto the system folder, for instance.

Nandroid

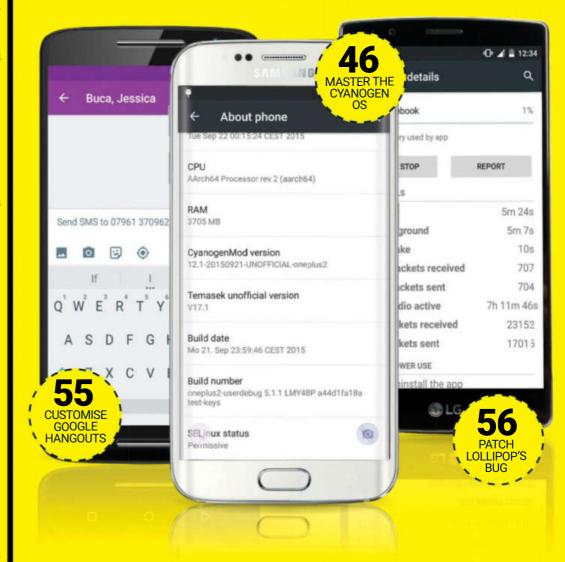
You might come across the phrase 'perform a Nandroid backup'. This means using a custom recovery tool to make a back-up image of everything currently on your phone: OS, apps, data etc. It's very useful should you wish to restore your phone to its previous state later.

Radio

'Radio' refers to the software on your Android device that deals with making phone calls and data connections. Updating your radio version can bring better battery life and signal strength to your device. Some ROMs require the latest radio.

Flash

The storage in your device comprises flash memory, which is a type of solid-state storage. The terms 'flash' or 'flashing' mean installing some new software onto your device's storage.



46 Ultimate guide to
Cyanogen OS
Discover how to install the Cyanogen
OS and enjoy all its amazing features

52 Hacking Tips & Tricks
Essential hacking advice, including how to fix the Note 5's RAM management

54 Unlock your bootloader
Discover how to remove the barrier to adding your own custom OS

55 Completely customise Google's Hangouts app Personalise Hangouts with new colours and shortcuts using XHangouts 56 Patch Lollipop's mobile

radio active bug Fix Android 5.0's long-standing mobile radio active bug immediately

58 Save battery with Smart Network

Automatically disable Wi-Fi, mobile data, Bluetooth and NFC when your device's screen is off



The ultimate guide to Cyanogen OS

The CyanogenMod OS enables users to customise their devices completely

For those who like to hack their Android devices, there's one custom ROM/OS that stands head and shoulders above the rest: CyanogenMod. Built for the target device from the ground up, CyanogenMod combines a near stock look and feel with a huge number of useful additions to enhance the Android experience. People turn to CyanogenMod for a number of reasons. Sometimes it is just to get that stock experience and rid their device of manufacturer skins such as TouchWiz or Sense, but sometimes it is to update their device to a newer version than the manufacturer has officially made available. A lot of the devices supported on CyanogenMod are older devices that have been abandoned by official upgrade paths, but they live on through the community of developers and maintainers responsible for the OS.

Although a lot of devices are supported by CyanogenMod, not every phone and tablet is and there are some prerequisites before developers can add support. The device ideally needs to have an open or unlockable bootloader, a custom recovery (for the end user to be able to load the ROM onto their device) and most importantly, full source for the kernel and any other open-source derived parts of the build. Although manufacturers are obliged to provide this under the terms of the GPL (General Public Licence), actual conformance is often quite patchy. Even when code is made available, it doesn't always work properly.

If CyanogenMod is available for a device, there is no guarantee that it will work fully, particularly in the early stages of a device's life. As the ROM is developed and maintained purely by volunteers, it is often developed in someone's spare time and is reliant on feedback by users to track down and help resolve issues. Support for proprietary hardware innovations (such as the Galaxy Note S Pen) is also often very patchy.

The only exception to this are devices that ship with Cyanogen OS (vs CyanogenMod). These are official, supported distributions on devices like the OnePlus One and the ZUK Z1.



Five top tips for Cyanogen Mod

1. Customise with new themes

The CyanogenMod ROM includes a built-in theme engine with a huge number of downloads in both the free and paid for versions from the Play store. These themes can change every aspect of the OS, including the SystemUI notification pull down.

2. Customise with Trebuchet

A custom launcher is included called Trebuchet. It permits full customisation of the homescreen and includes full support for the CyanogenMod theme engine. Trebuchet is good, but not as feature packed as third-party alternatives.

3. Control of your lost device

When configuring CyanogenMod, you will be prompted to create a Cyanogen account. This can be used for the remote find and wipe services so that if you lose your device, you still have control.

4. More applications

CyanogenMod includes a number of applications that aren't part of the base Android OS, such as a file manager, a DSP Manager (enabling you to tune the sound with a built-in graphic equaliser) and a messaging app with secure features.

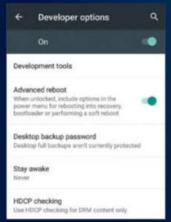
5. Enthusiast options

A number of enthusiast options are included in CyanogenMod because, after all, it's built by enthusiasts! Full CPU control is included, consequently enabling you to change the speed, governor and scheduler of your processor easily.

Hidden developer settings Developer settings unlock a number of useful features on your CyanogenMod device

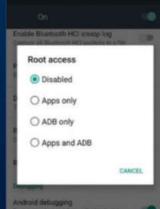
Enable developer settings

The developer settings in CyanogenMod are unlocked in the same way as they are in regular Android, Load the Settings app, open the About page and tap on the build number five times. 'Developer settings enabled' will be displayed in a toast message when complete.



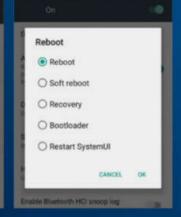
Enable root access

Root access is built in to CyanogenMod so there's no need for you to flash a SuperSU ZIP or even mess around with having to root your Android device. Simply open the developer options and change the Root access setting



Advanced reboot options

Rebooting to recovery or bootloader can actually be a bit of a pain when using stock Android. This is easily solved on CyanogenMod by enabling the Advanced Reboot developer option, which adds Soft reboot, Recovery and Bootloader to



Install the CyanogenMod ROM

Get CyanogenMod running on your device

Unfortunately, installing CyanogenMod on your device isn't as simple as downloading an application and running it. There are a number of steps you have to follow, but we can help make your life easier. Before you start, make sure you have a stock system image to flash back to!



Download ROM image
Before you start, check CyanogenMod is available for your device and, if so, download it.
There are two main places to check: on the official get.cm site or, if you can't find your device there, in the development forum at XDA-Developers.com.



After you have TWRP installed and booted, use the backup option as this will give you another way to undo changes should you wish to return to stock. After copying off the backup and wiping your device, flash the CyanogenMod ZIP.

	ives to provide a quality product. However, it is your decision to in Team Win takes no responsibility for any damage that may occur
TWRP.	
Status:	
Support State	a: Current
Maintainer: N	ione
Code Name:	fo
Device Tree	Ness
Support three	d on xds-developers
App Instal	Method (Requires Root):
Download the	TWRP Manager app:
· Play Stor	
 No Play 3 	Store? Find a direct download link at the bottom of this page.
	p and open it. Tap on Install TWRP. Select your device from the di Recovery. The file will download and be installed automatically.
Download	Links:
Current and	past versions of TWRP can be found at one of the mirrors below:
-	Recommended)

Download TWRP
In order to flash CyanogenMod, you'll
need to use a custom recovery image. The most
popular is TWRP from twrp.me (or from XDADevelopers). You may need to unlock the

bootloader on your device in order to flash.

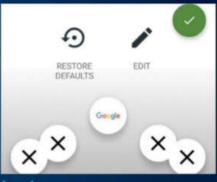
This operation may i	install incompatible
software and render y	our device unusable.
Fold	der:
/sdc	card
File to	flash:
open_gapps-arm64-5.	1-stock-20150922.zip
Press back to cand	el adding this zip.
Zip file signature verification	1.
File 1 of n	nax of 10
Add More Zips	Clear Zip Queue

Install GApps
Google apps such as the Play store are licenced by Google and are not permitted to be distributed as part of CyanogenMod. You can download a GApps package and install it, also from within TWRP, for Google functionality.



Whether you have hardware or software buttons, CyanogenMod enables you to customise them

Button customisation



More buttons can be added to the navigation bar at the bottom and the home button ring targets can be modified too. Arrow keys can be enabled when typing.

+	Power menu	Q
Action	ns	
Rebo	ot menu	
	click reboot atly trigger reboot action	(3)
Scree	enshot	(120

As well as enabling the advanced reboot menu, more options can be toggled for screenshot and airplane mode. The useful sound panel can also be displayed.

Volume buttons	
Wake up device Overrides playback control	(3)
Playback control When the screen is off, long pressing the volume keys will seek music tracks	
Volume keys control ringtone volume If on, volume keys control ringtone volume. If off, volume keys control media volume.	

The volume buttons on the side of the device can be used to wake the device or for control when playing music. They can also provide cursor control when typing.

Keep your data safe with **Privacy Guard**

A key feature of CyanogenMod is Privacy Guard, letting you manage access to your personal data

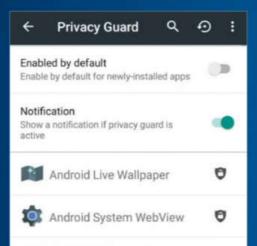
If there's one area where standard Android is surprisingly weak, it's privacy. When installing a new application, the user is prompted to permit or deny permissions en masse, but there is no real granularity of control over exactly what the app can access. CyanogenMod helps get around this problem with its Privacy Guard feature.

When enabled, Privacy Guard keeps watch on exactly what your installed apps are doing and if they try to carry out an action that requires a specific permission (such as accessing the internet), a prompt will be displayed on screen asking whether you wish to grant that permission.

Although Privacy Guard does give you a huge amount of control, it should be noted that not all applications will play nice with it. Some will crash when denied a permission. so there will be a degree of trial and error as you start using the feature. Privacy Guard is most valuable for catching applications using permissions you wouldn't expect.

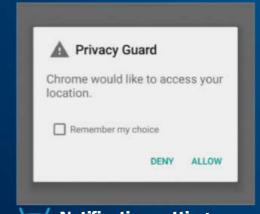


Control app permissions The Advanced option on the overflow menu lets you view what permissions are being used by apps (grouped by type) and when they were last requested. You can also stop specific permissions (also known as App Ops).

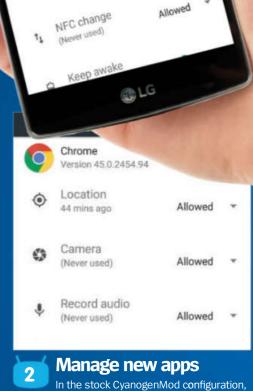


Configure installed apps

The Privacy Guard options can be found in the Settings menu. From the configuration page, set preferences for currently installed apps. Use the overflow menu to control the built-in system apps that have privacy disabled by default.



Notification settings The Show notification option in the Privacy Guard settings menu controls whether a pop-up is displayed when a permission is requested. This should be left on or you won't be aware when a permission is denied!



a

Allowed

Allowed

Privacy Guard

Gmall

Version 5.6.103338659 release

Modify contacts

Read calendar (Never used)

> Modify calendar (Never used)

(Never used)

Read contacts (Never used)

> SMS message limit O None 05 ○ 10 30 ○ 50

> newly installed apps will automatically be granted

permissions that they request. You can use the

prompted for all permissions for new apps.

'Enabled by default' toggle to ensure that you are

Prevent SMS data leaks As an additional privacy feature, CyanogenMod enables you to specify a rate limit for outgoing messages of between five and 200 per minute. If an app attempts to send at a rate faster than this, an alert is displayed.

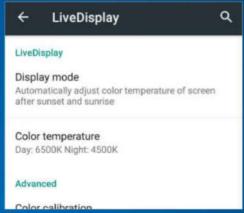
Customise your device's display

CyanogenMod includes a host of different features for tweaking your device's display properties

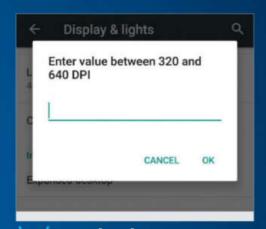
In addition to standard display options for adaptive brightness and sleep, CyanogenMod provides access to other features that are either not in stock Android or are difficult to get without root access and manual editing of files.

The status bar and notification drawer can be extensively customised with commonly requested features, such as a centred clock, battery percentage and notification counts included as well as fully configurable quick-settings tiles with additional functionality like weather display.

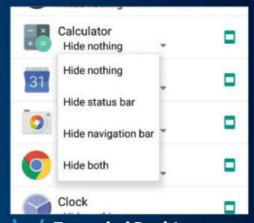
A quirk of stock Android is a lack of support for 36o-degree rotation, so you can't use your device upside down. CyanogenMod includes optional support for this – useful if your headphone jack is on the 'wrong' end of your device!



Time-based LiveDisplay
LiveDisplay automatically optimises the
screen based on the time of day and ambient
conditions to reduce eye strain. This permits the
device to change colour to reduce blue light later in
the day, a known contributor to sleep problems.



CD density
The LCD density value can only be changed on stock Android by editing the build.
prop. The CyanogenMod density controls let you change how much information is displayed on the screen by adjusting the DPI.

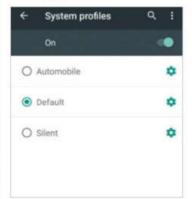


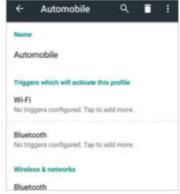
Expanded Desktop
Expanded Desktop automatically shows or hides the navigation bar, status bar or both when using specific apps to maximise space. The navigation bar can be restored by sweeping up from the bottom of the screen.



Automate with system profiles

System profiles enable the configuration of the device to be changed based on a number of specified triggers







Ring mode Normal Vibrate Mute Leave unchanged

System profiles

System profiles are permitted after installation with Default, Silent and Automobile profiles. Silent sets the ring mode to mute, Default sets it to normal and specifies volume levels for the system. Automobile enables GPS and Bluetooth.

Profile triggers

Profiles can be triggered using Wi-Fi (eg when connected to your home network), Bluetooth (eg when connected to the hands-free in your car) or NFC (perhaps to launch a night-time profile with a NFC tag on the bedside table).

Profile powers

Profiles can enable or disable Bluetooth, GPS, Wi-Fi, NFC and auto-data sync. They can configure the volume levels for alarms, media, ringtone, notification streams and switch airplane mode, lockscreen mode and set screen brightness.

Notification overrides

Notification overrides are used by configured groups of apps to override the notification mode, tone, ring mode, phone ringtone, vibrate mode or lights mode. A night-time profile might let critical apps make noise, but keep other apps silent.

Compile CyanogenMod straight from the source

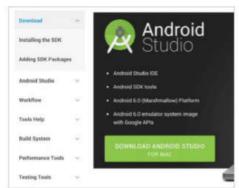
Why download the pre-built CyanogenMod when you can experiment with the code and build it yourself?

CyanogenMod is based on AOSP: the Android Open Source Project. One of the best things about Android is that, if you have a Nexus device, you can download the source code and compile it yourself. This means you can change the code exactly where you want, re-compile and then deploy it to your device.

As CyanogenMod is based on AOSP and everything is open source, the same thing applies.

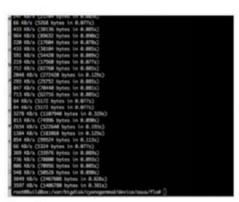
However, there is no such reliance on owning a Nexus as many more devices are supported. In order to use this tutorial, you should ensure that your device is on the official supported list at wiki. cyanogenmod.org/w/Devices.

In order to build the code, you'll need a relatively powerful PC (Windows, Mac or Linux) ideally with 8GB RAM or more, at least 50GB free disk space and a good internet connection too!



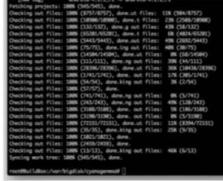
Install prerequisites

Android builds best on Linux, so try to use a Linux machine or VM. Download and install the Android SDK from goo.gl/2qpr and the required build packages listed at goo.gl/gtrYW. Finally, you need to install repo, which is used to actually check out the CyanogenMod code.



Extract proprietary files

Building CyanogenMod requires closed source proprietary files that Cyanogen doesn't have permission to distribute, so extract these from your device. Connect your device, ensure ADB is working then run the ./extract-files.sh script that will pull the files to your PC.



Download source code

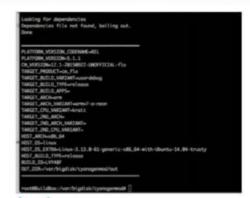
Create a directory to download the source into, 'mkdir ~/android/system/'. Change to that directory and use the installed repo command to get the source code – repo init -u https://github.com/CyanogenMod/android.git -b cm-12.1 downloads CyanogenMod 12.1.

using prebuilt boot.img from IMAGES...
boot size (7593984) is 32.92% of limit (2)
no bootloader.img in target_files; skipping in
no radio.img in target_files; skipping instal
no DDR.bin in target_files; skipping install
running: openssl pkcs8 -in build/target/p
running: java -Xmx2048m -jar /var/bigdisk
curity/testkey.pk8 /tmp/tmpAGviu9 /var/bigdisk
done.

Package Complete: /var/bigdisk/cyanogenmod/or
make completed successfully (01:26:42 (0)
root@BuildBox:/var/bigdisk/cyanogenmod# []

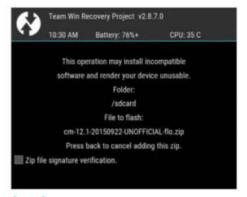
Build the code!

You should be ready to go! Use the export USE_CCACHE=1 command to speed up future builds then croot and brunch hammerhead (replacing the codename with your device's one) to launch the build process. The compilation process will take a long time.



Device-specific code

Set up the build environment with the source build/envsetup.sh command then grab the device-specific code. You need to know the codename for your device from the supported device list. For the Nexus 5, aka 'hammerhead', use the command breakfast hammerhead.



Deploy to your device

In the 'out' directory you'll see a file with a name like cm-12.1-20151001-UNOFFICIAL-hammerhead.zip. This is a ROM ZIP that can be installed via your custom recovery (either CyanogenMod or TWRP) as normal. Remember you need GApps installed for the full experience!

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status update

Which devices are best for the hacking scene?

Moto X Style

Rooted?: Yes
Active Development
Medium

With its near stock Android UI you won't have a need for ROMs, but the Style is ideal for mods and tweaks.



Samsung Galaxy Note 5

Rooted?: Yes Active Development

Medium
Most versions of this
device are rooted,
though it's not as easy to
do as with some other
phones on the market.



Honor 7

Rooted?: Yes Active Development:

This impressive mid-range phone is very easy to root, enabling you to replace the device's heavily customised software with something a bit more stock-like.



Moto X Play

Rooted?: Yes
Active Development:

Low

The Play can be rooted, but development for it has yet to properly take off. Keep a watchful eye for some good mods rather than ROMs.



Tips & Tricks

Get a map over any of your screens

Despite a few innovations over the last couple of years, most notably by Samsung and Sony, smartphones still haven't quite mastered the handling of multitasking. Keeping multiple apps running at the same time is a breeze, but switching between them is a pain.

MiniMap is a different take on multitasking and is built around a maps app. Instead of requiring you to switch between several full-screen apps, MiniMap places a tiny thumbnail map as an overlay onto



MiniMap is a new take on multitaskin

any other app you're using. It's a great idea and offers the core functionality of the Google Maps app. The overlay sits in the corner of your screen (but you can reposition it if you want to) showing your exact location, and updates in real time.

MiniMap is a really effective approach to providing nonintrusive access to a 'glanceable' app, ie one that you look at regularly, but rarely need to interact with. It gives you the information you need, but also enables you to continue using your phone for other tasks. With screen sizes and resolutions still on the rise, we could easily see this idea extended to other apps. Floating YouTube video, anyone?

Amazon Fire TV Stick: root or not?

Amazon's Fire TV Stick is a direct competitor to Google's Chromecast, except that it runs a full version of Android. The tiny device plugs into the back of your TV and enables you to stream content from various online sources, effectively turning any TV into a smart TV. A new version of the Stick has recently been released, although it represents only a minimal update over the original.

The Fire TV Stick can be rooted, but the question is whether it is worth it or not. The benefits are actually negligible. As an Android device, the ability to install apps from 'Unknown Sources' is in place, even if it isn't readily accessible. Simply by using the Apps2Fire app (free) from the Google Play store you can install apps to the Stick by sending them from your phone. You will need to have the APK or you can't install directly from the Play store. However, the kinds of apps you would want to install, such as the excellent media streamer Kodi (formerly known as XBMC) can be added to the device with minimal technical knowledge. You can find more info on doing that on the official Kodi wiki at kodi.wiki/ view/Amazon_Fire_TV.

SlimRoms' ROMs are now back

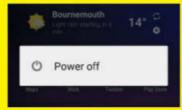
The Android ROM scene is in something of a state of flux at the moment. The leading name, CyanogenMod, has long since become a professional outfit, while vastly improved software from manufacturers has made custom ROMs less essential than they used to be. The return of SlimRoms could give the scene the shot in the arm that it needs.

After a hiatus, SlimRoms is back and now a registered company in the UK, though the team does say that it isn't about to go corporate. The team's first release will be SlimLP, based on Lollipop, with a

owidkhacks

Uninstall malware easily

The Adult Player fake-porn ransomware has recently been in the news. It's hard to install without ignoring all common sense precautions, but if you do fall for it you can clear up your device pretty easily.



Boot into safe mode
The app will run when you start
your device, but once it's running it
stops you from unlocking your phone.
Boot into safe mode to prevent it from
starting by holding down both volume
buttons as the device boots.



The app is granted administrator privileges when installed, so you must first revoke these. Go into Settings> Security>Device Administrator and locate the app. Untick the box next to it. Next you need to uninstall the app.



Uninstall the app
Finally, go to Settings>Apps
and locate the app. Tap the
Uninstall button to remove it. You
should be able to fully reboot your
Android phone and find that it's
now working properly.

Share your tips >> facebook >> twitter

Got a great Chromecast hack? Let us know!

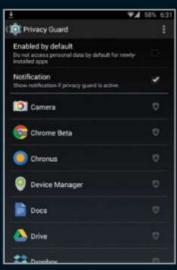






Marshmallow ROM set to follow soon after. There will also be a suite of open-source tools that will help the entire ROM-development community.

SlimRoms sports a range of additional features on top of Android, including Privacy Guard for managing (and restricting) permissions and



Privacy Guard manages permissions

Notification reminders where you can add notes with alarms inside your notifications pane.

A SlimRom is one of the most widely supported ROMs with versions for Nexus, Galaxy, HTC, Motorola, LG, Sony and the OnePlus family. Keep an eye on slimroms.net for details of the upcoming releases.

Install AOSP on your OnePlus One

The OnePlus One was the ultimate smartphone for Android enthusiasts after its release, so it's no surprise that it has become one of the top devices

for hacks and mods. The device now has a brand new custom ROM. AOSParadox, which offers something completely different to OnePlus One users: a true AOSP experience.

All ROMs for the OnePlus One have, to date, been based on CyanogenMod. Not only is it the most popular base for custom ROMs, it was also the software that originally shipped with the OnePlus One. AOSParadox is based on CAF AOSP, which is the basic AOSP (Android Open Source Project, the 'pure' form of Android) with additional customisations for Qualcomm hardware. After flashing the ROM, you will be as close as you can get to a Nexus device without actually buying a Nexus. Grab the ROM, along with more information, from the xda-developers forum: goo.gl/u7AEZI.



Install AOSP on your OnePlus One

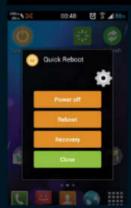
Fix the Note 5's RAM management

The Samsung Galaxy Note 5 is one of the best Android phones of the year, but it isn't perfect. Many users have expressed disappointment at the rather heavy-handed RAM management the device uses, which sees background apps being closed far quicker than you would expect to see on such a high-spec handset.

Fortunately, there is a way to address, if not fix, the problem so long as you have root. The process involves editing the build.PROP file, a text file on all devices that contains various items of configuration information. Details of the solution can be found at goo.gl/huj8hW. Although easy to do, it isn't a trivial solution, so make sure you know what you're doing — and back up fully — before you attempt it.



Hacking the easy way Get great new features without getting your hands (too) dirty



Quick Reboot (Root)

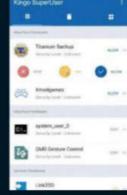
Price: Free + IAPs From: Google Play **Need root?** Yes This app makes rebooting your device easier. It augments the standard Power off menu with additional options including Reboot and boot into Recovery mode. An essential tool for power users.



Battery Calibration

Price: Free From: Google Play **Need root?** Yes

When you flash a new ROM, you might sometimes notice your battery life takes a nosedive. This often isn't the ROM's fault, but the battery stats need to be recalibrated. This app will take care of the job for you.



Kingo SuperUser **IROOTI**

Price: Free From: Google Play **Need root?** Yes Kingo SuperUser is an app that enables you to manage all the root apps on your device. It is used to grant root permissions and enables you to revoke them too in order to keep your device as secure as possible.

Hacker Zøne

Works with >> Any version of Android Difficulty >> Easy

Unlock your bootloader

Remove the barrier to adding your own custom OS to your Android device by unlocking your phone's bootloader Even if you have root access, you still are not automatically able to install your own operating system on your Android handset. This is because of the bootloader: the code that tells the OS to load up is locked to that particular OS, preventing any alternatives from being installed. While this is a reasonable security feature, it is also a problem for anyone who wants to customise their phone. Therefore unlocking the bootloader is key to full

phone customisation. Luckily, it isn't too difficult to do so once you have downloaded the correct SDK onto your computer. Before starting this process, however, you must be careful to back up all of your apps and files because unlocking the bootloader will wipe the lot from your device.

This tutorial will show you what files you need to download to begin the process of unlocking the bootloader and then how to complete the process.

SDK Tools Only

If you prefer to use a different IDE or run the tools from the comma download the stand-alone Android SDK Tools. These packages pro without an IDE. Also see the SDK tools release notes.

Platform		
Windows	installer r24.3,4-windows.exe (Recommended)	139477985 bytes
	android-sdk_r24.3.4- windows.zip	187496897 bytes
Mac OS X	android-adk_r24.3.4- macoex.zip	98340900 bytes
Linux	android-sdk_r24.3.4-linus.tgz	309138331 bytes

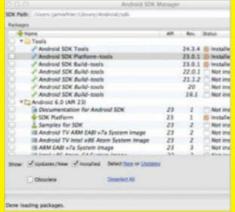
Download SDK

Head to goo.gl/87bZIx and scroll down to the bottom. Under Other Download Options, you'll see a table marked SDK Tools Only. Choose the option specific to your computer's operating system and download the linked file, accepting the terms and conditions.



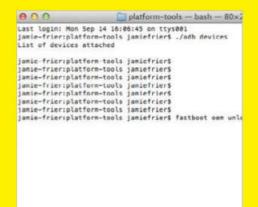
Change your PATH

Open up the Terminal and press the up arrow. Change the PATH of the file to something that is easily found by the SDK, such as your documents directory. When asked to bypass the existing bootloader, the phone should now be able to find the files telling it to do so.



Install platform tools

Open Android SDK Manager and select Android SDK Platform-tools from the Tools list. Check the tick box on the left and press Install packages in the bottom right-hand corner. This will download the necessary files to unlock your bootloader. Copy the file to your desktop.



Unlock bootloader

Turn off your phone and reboot it in bootloader mode, usually by pressing the power and volume down buttons. Press Ctrl+Y on your keyboard to return to the main Terminal page. Type fastboot oem unlock next to the last line of code and hit Enter.



Download fastboot

Depending on what operating system you use on your PC, download fastboot. The Mac version can be downloaded from mediafire. com/download/Onwuinalydi/fastboot-mac.zip and the Linux version from goo.gl/3A36Gu. Extract the files and save them to your desktop.



Confirm unlock

The terminal will ask you for confirmation that you want to complete the action. Hit the power key and your bootloader should unlock. Restart the device in bootloader mode and you should see a line saying Device is Unlocked. You are now free to install your own ROM.

Completely customise Google's Hangouts app

Personalise Hangouts with new colours and shortcuts, using the XHangouts module from Xposed

Out of the box, Hangouts isn't the most customisable of chat apps. XHangouts is an Xposed module that gives you that missing control over messaging, whether it's making cosmetic tweaks like changing the app's colour or adding new shortcuts to Hangouts.

If you enjoy using Hangouts to share photos then XHangouts lets you customise the way your app

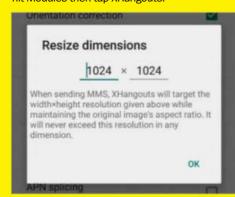
handles and processes your images, which makes it possible to send higher quality images.

Since XHangouts is an Xposed module, it does require the Xposed framework to be installed on your device. You'll find Xposed for Lollipop at goo. gl/jRjap9. If you're running an earlier version of Android, you can install the Xposed framework via an in-app updater available from goo.gl/VAuSYD.



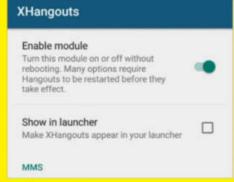
Install XHangouts

Launch the Xposed Installer, tap Modules and search for XHangouts. Download and install then return to the main Installer menu. Tap Modules and ensure XHangouts is enabled, Reboot, Relaunch the Xposed Installer. hit Modules then tap XHangouts.



Auto-orientation

If you like to take photos upside down or sideways, XHangouts can automatically rotate these images. Enable Orientation correction, tap Correction mode and choose between the auto-orientation or a set angle. Finally, set the resolution by tapping Resize dimensions.



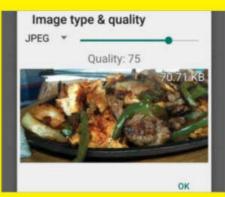
Enable XHangouts

Tap Enable module. You'll now have access to the XHangouts settings. You can also hide the XHangouts app as you'll continue to access Hangouts via the regular Hangouts app. so having a dedicated XHangouts app isn't useful and would take up space.

XHangouts	
Hide call buttons Stuff the call icons back into the dropdown menu	~
Send & lock Long press the send button to send and lock the screen. Hangouts will ask for root.	Z
Disable proximity sensor	

Send & lock shortcut

XHangouts can let you lock your device immediately after sending a message by long-pressing on Hangouts' send icon. To get this dual-purpose send icon, tap Send & lock. This does require root permissions so grant XHangouts root when requested.



High quality images

XHangouts has lots of options for perfecting any photos you share via Hangouts. You can increase the quality by enabling 'High quality resizing'. Once enabled, you can increase or decrease the quality by tapping 'Image type & quality' and manipulating the slider.



Colourful Hangouts

One of the most eye-catching changes you can make to Hangouts, is changing the app's colour. In the UI Tweaks section, tap 'App color' and choose a new colour from the menu. Note that you may need to reboot your device before the colour change comes into effect.

Hacker Zøne

Works with >> Android 5.0 Difficulty >> Advanced

Patch Lollipop's mobile radio active bug

Fix Lollipop's long-standing mobile radio active bug today

Many Android users have been experiencing a battery-sapping mobile radio active bug in Lollipop. This bug is caused by the system failing to put your device's radio component back to sleep after

> being used by an app, so that the component stays awake and drains your battery. This bug occurs in apps that use mobile data and has been troubling Lollipop users since the Android 5.0 release in 2014.

Although this bug is scheduled to be fixed in Android 6.0 Marshmallow, there's an Xposed module that could

potentially patch it today.

While some users are reporting battery improvements after installing the

MobileRadioActiveFix module, others are reporting that although the module does fix the strange battery usage statistics, this doesn't translate into a greatly improved battery life. The good news is that if you want to try the fix for yourself, there's plenty of third-party battery statistic apps out there that can help you gather an impartial picture

of whether this Xposed module does have an impact on how your device consumes battery.

This tutorial shows you how to test whether the mobile radio active bug is affecting your device before showing you how to install the Xposed framework and the MobileRadioActiveFix module.



Check for bug The first step is to test

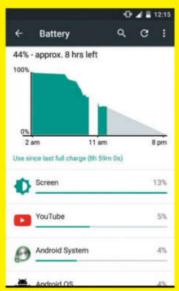
whether you are currently being affected by the mobile radio active bug. Enable mobile data with Wi-Fi switched off and use your device for a good period of time, making sure to interact with apps that consume mobile data, for example browsing the web using the Chrome app.



Flash Xposed framework

Go to goo.gl/jRjap9 and download the Xposed Installer and the correct xposed-v*-sdk*-*.ZIP for your device. Boot into your device's custom recovery and flash the xposed-v*-SDK file. Reboot. Using a file explorer app, navigate to your downloads folder and tap the Xposed Installer file.





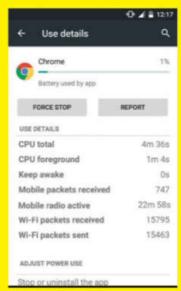
2 Check battery statistics

Disable mobile data and keep it disabled for a few hours, then open your device's settings and select Battery. You'll see a list of various apps and services. Tap each item in turn, these will take you to their Use details page. Check each item's mobile radio active statistics.



Download Mobile RadioActiveFix

Install the Xposed Installer and follow the instructions. Launch the Installer app, then tap Download. Tap the magnifying glass icon and search for MobileRadioActiveFix. When the module appears, tap it. Read the information then swipe to download the latest versions.



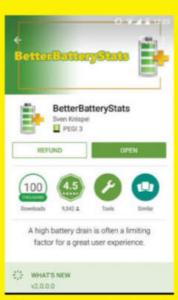
Mobile radio active number

This number should be quite low. However, if you're being affected by the bug, the mobile radio will either have been running the entire time that mobile data has been off or waking up intermittently. If this number is higher than you'd expect, the bug is probably responsible.



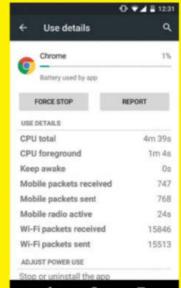
8 Enable Mobile ActiveRadioFix

Tap Install then Done. Return to the Xposed menu and select Modules. You'll notice a MobileActiveRadioFix module. Tap this checkbox. It will say that MobileActiveRadioFix doesn't include a user interface, so it won't appear as a dedicated app in your app drawer.



Download BetterBattery

If you do decide to try the Xposed fix, you'll need a clear picture of your device's battery usage before you install the module so that you can compare the before and after results. To do this, you'll need a third-party app such as BetterBatteryStats (£1.74/\$2.16).



Test battery stats

Xposed modules only become active upon restart, so reboot your device. At this point, it's worth repeating the initial test by enabling and then disabling mobile data, leaving your device for a while and then checking the mobile radio active statistics by opening your settings and selecting Battery.



SRecord your battery usage

Install BetterBatteryStats then launch it and tap 'Install as system app' when prompted. Reboot. Then launch the BetterBatteryStats app and spend some time exploring and monitoring exactly how your device is consuming battery life over a period of time.



n-depth analysis

However, the real test is whether a change in the reported mobile radio active statistics translates into any actual improvement in your device's battery usage. You'll get more accurate results if you measure this with your third-party app, so launch BetterBatteryStats and take a look.

Hacker Zøne

Works with >> Android 5.0 and up Difficulty >> Advanced

Save battery with Smart Network

Automatically disable Wi-Fi, mobile data, Bluetooth and NFC when your device's screen is off

□ □ ■ 5:54 Data synchronization DATA SYNCHRONIZATION Disable Auto Sync Disable data auto sync over mobile networks and WiFi when screen is Off. Sync deactivation delay Select the delay screen goes Off before disabling auto synchronization. 10 minutes Keep while charging Do NOT turn off synchronization while the device is plugged to USB/AC 1 TIMER Activation timer Enable Data synchronization for a specific duration during screen Off. 1 Deactivation Interval Keep data synchronization disabled for 45 minutes

Are you always forgetting to turn off your Android device's Wi-Fi and mobile data? Or do you find yourself leaving your phone connected to the internet on purpose, just to make sure you never miss an incoming email or mention on Twitter?

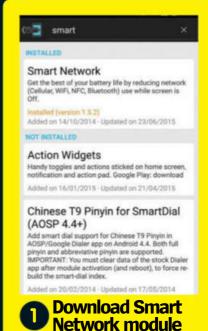
This kind of constant connectivity can really drain your battery and potentially leave you with a massive mobile-data bill. Smart Network is an Xposed module that sets out to solve this problem by automatically disabling your device's Wi-Fi, Bluetooth, NFC and mobile data as soon as your device's screen turns off.

While this can make your battery and data allowance go further, being disconnected the entire time your device's screen is may not always be desirable,

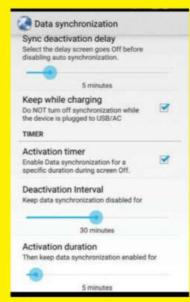
so Smart Network also provides several ways of tweaking the way it handles connecting and disconnecting. This includes the ability to define intervals where your device should temporarily turn Wi-Fi or mobile data back on; for example, you might want Smart Network to reconnect to the internet via Wi-Fi for five minutes once every hour.

This tutorial will show you how to set up Smart Network and will walk you through its major features, including the different ways that you can tweak the Smart Network experience to better suit your needs.

Yposed framework to be installed on your device. You'll find Xposed for ipop at goo.gl/jRjap9.

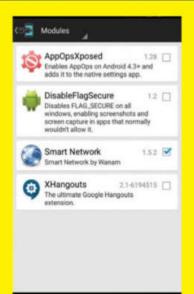


Go to Settings and tap Xposed Installer. Select Download, tap the magnifying glass and search for Smart Network. Once the module appears, tap it, swipe to Versions and download the latest version. Then tap Install. Return to Xposed Installer's main screen and tap Modules.



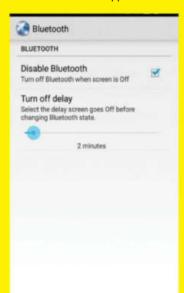
Activation timer If you don't want to be

disconnected for the entire time your screen is off, then you can temporarily turn auto sync back on at set intervals, such as once every half an hour for five minutes. Just tap Activation timer, then set deactivation and activation durations using the corresponding sliders in the menu.



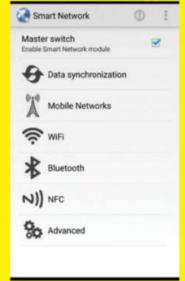
Activate module

Before you can use this module, you need to activate it. Tap Modules and then tap the Smart Network module. Xposed changes only become active upon restart so reboot your device. Once your device has finished booting, open the app drawer and launch your new Smart Network app.



Disable connection types

Return to the main Smart Network menu. This app can automatically disable mobile networks, Wi-Fi, Bluetooth and NFC when the screen is off. Select the desired connection type from this menu and then tap the Disable option at the top of the subsequent menu.



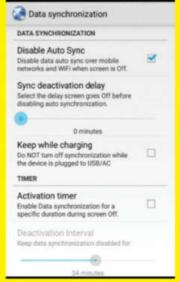
Master switch

The first option in the menu is Master switch. This switch activates and disables all of your Smart Network settings so make sure it's turned on. One of Smart Network's features is automatically disabling auto sync when your device's screen is turned off. Tap Data synchronization to start.

White-list application	ns	
Earth	D	
Email	3	
ES File Explorer		
Facebook		
Fit		
Gmail	₹	
Google		
Google Now Launcher		
Google Settings		
Cancel	ок	

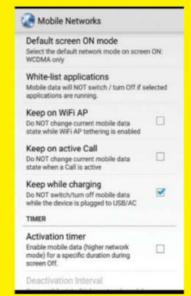
Build a white-list

Another feature is Smart
Network's white-list. Select Mobile
Networks from the main menu and
tap White-list applications. Here you
can select some apps to prevent
Smart Network from disabling the
mobile data connection even when
the screen is turned off. Choose
your apps then tap OK.



Disable auto sync

When Smart Network disables data synchronisation, you won't receive notifications about online events, such as new emails or Facebook messages, when your screen is off, but you'll also save battery and mobile data. To disable data sync over Wi-Fi and mobile networks, tap Disable Auto Sync.



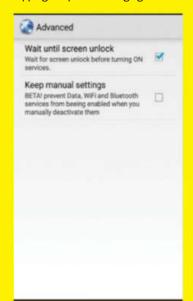
Keep while charging

If your motivation for using Smart Network is to preserve battery life rather than save on mobile data, you can prevent Smart Network from disabling your data connection when plugged in and charging. Then battery life is less of an issue. To do this, tap Keep while charging.



Get extra time

You may want to set a delay in-between the screen turning off and your internet connections being severed. To create this buffer, use the 'Sync deactivation delay' slider to set a time. You can also specify that auto sync shouldn't be turned off if your device is charging by tapping Keep while charging.

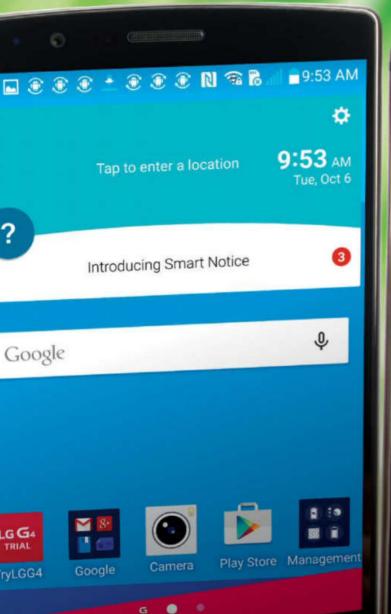


Unlock screen

Another feature that may be useful is specifying that the screen must be unlocked before Smart Network reactivates connections. This means you can check your lockscreen for notifications without reconnecting. Return to the main screen, tap Advanced and select 'Wait until screen unlock'.









We test out four of the

most impressive phones in the Android market to see which flagship is the best

Every year Android phones hit new heights in terms of specifications, build and looks. The battle for supremacy at the top of the tree is a fierce one and that competition makes each year's flagship war a fascinating spectacle.

However, with so many phones crowding the market it can get a little tricky to decide which handset really is the best. There are so many factors to consider that the process can be quite boggling. Consequently, we have decided to pit four of the phones with the highest specifications against each other to find out which is the true flagship king. However, we do know

that specifications aren't everything to everyone so we will also point out some extra features that make each of these phones so special.

The phones in question are the LG G4, the Samsung Galaxy S6, the HTC One M9 and the Moto X Style. These are among the latest and greatest phones to emerge from the Android-production line as the established brands attempt to fight off a wave of value handsets that have emerged from the likes of Xiaomi, Huawei and OnePlus. Which one will raise the crown to be the king of Android phones for 2015? »



LGG4 information

Price **£419.99**

>>> More information **lg.com**>>> Supplied by **LG**

technical specs

"" Operating system	Anaroia 5.1 Loilipop
>>> Processor	Qualcomm Snapdragon 808 1.8GHz hexa-core
» Memory	32GB storage/3GB RAM
>> Dimensions	148.9 x 76.1 x 6.3 – 9.8 mm
>> Weight	155g
>> Display size	5.5-inch
>> Display resolution	2560 x 1140 pixels (538ppi)
>> Connectivity	4G, Bluetooth 4.1, NFC
W Camora	16MD roor 9MD front

»head-to-head

Improvement on predecessor

The leather backing makes it instantly different from the G3. The battery, screen and cameras have all been impressively upgraded too with a new industry-leading 2TB microSD storage.

Headline feature

The feature that sets the G4 apart from the others is the leather backing. The specs are good if not spectacular. Big money phones are a status symbol and LG has really set itself apart from the crowd.

Value for money

You can pick up the LG G4 for just £419.99 from Clove SIM Free, which is a bargain considering it was £519.99 at launch. For this you get an amazing phone that's much cheaper than the likes of the S6 or M9.

Design

What more can we say? Even the standard G4 looks great with its marginally curved screen and button-free edges. The leather options take it to another level and score heavily in terms of design innovation.

» Verdict

We have a lot of time for the LG G4. It looks brilliant and has been well upgraded. It's a shame the benchmarking score is a little low



Wireless charging

Strangely the G4 supports wireless charging, but doesn't have the capability built into the handset. You can buy a Quick Circle case or a Oi sticker that you can pop onto the inside of the G4's casing

Super screen The screen measures 5.5-inches and uses LG's Quantum IPS technology to create a 25 per cent brighter display with a higher contrast ratio and wider colour gamut. It also boasts 538ppi, second

Google

Introducing Smart Notice

The cute curves

At its thinnest, the G4 is 6.3mm and at its thickest it's 9.8mm. This may seem marginal, but it does make using the phone that little bit more comfortable to use over time

9:53 AM

0,



Fourth time lucky

UX 4.0 is definitely our favourite version of LG's own custom ULIt is bright and colourful, but still displays all of the apps and widgets without too much unnecessary customisation. This is a very easy phone to navigate your way around

LGG4

only to the S6

The phone that has dressed to impress is out, but it needs to be better than 2014's greatest phone: the LG G3

The LG G4 had quite a tough task on its hands when it was released back in May. The G3 was our phone of the year for 2014 so its successor had big boots to fill. Luckily, LG pulled another cracking phone out of the bag. The G4 retained the gentle curve and sense of style that we loved in the G3, yet it upgraded the specifications and slapped a leather back on some of its handsets to make them truly stand out from the crowd. This stylish addition was just the thing needed to make the G4 different from its predecessor without a radical redesign that could alienate its core fans. There were also non-leather options in a range of colours that came with LG's familiar crisscross pattern on the back.

Inside it's equally impressive. The G4 has a hefty 3,000mAh battery, 3GB RAM, 32GB expandable storage and a Qualcomm Snapdragon 808 1.8GHz hexa-core processor. The eagle-eyed among you will notice that this wasn't Qualcomm's newest processor at the time of launch, but as the 810 had been beset with overheating woes, this may have

been a wise decision. It barely impacts on performance, although it does concede quite a lot of benchmarking points to the Samsung S6 and the HTC One M9. However, this is something only hardcore users will probably notice.

The cameras are wonderful. The 16MP camera on the rear has a wide f/1.8 aperture that lets in a lot of light, ridding the G4 of the poor low-light photography of most phones. Admittedly, it does sometimes go a little too far and over-illuminate photos, but this is a small price to pay. The front camera shoots 8MP photos and again copes very well with challenging light. The app has a range of modes to suit everyone from experts to point-and-clickers.

We're also a big fan of LG's UI, the UX 4.0. It is smart, easy to follow and lightweight. It has been improved since the previous one and this is yet another positive step for the G4.

Having had a lot of pressure on its shoulders, LG has certainly delivered the kind of flagship upgrade that we wanted to see from a big money mobile.

Snappy snapper

The upgraded camera technology means that you can take a photo in just 0.7 seconds. Double tapping the home button will launch the camera app even when the screen is off so you won't miss those important moments



Storage wars

The lack of any SD-card support for the S6 has forced Samsung to offer three different models with different storage capacities. You can buy an S6 with 32GB (£499), 64GB (£639) or 128GB (£719) storage

Subtle speaker

The speaker is located at the bottom. As with most decisions in the S6 design, it makes it more attractive, but it's liable to be covered over. We like the grill pattern though



No strings

The S6 supports wireless charging so you can just pop it on a wireless-charging pad and it will power up your handset. The Quick Charge 2.0 feature gives you 50 per cent battery in 30 minutes

Samsung Galaxy S6

Has Samsung gone for looks over practicality with the S6 or is it as good on the inside as it is on the outside?

Samsung responded to lukewarm sales of its Galaxy S5 by completely redesigning the handset. Out went the plastic back, along with its removable battery and expandable memory and in came the full metal unibody that sealed in the battery, meaning an end to expandable storage. This was something of a controversial choice as many commentators said it was now very much like an Android iPhone. One of the best things about older Samsung devices was the ability to switch batteries in and out, something that is now no longer available. However, what definitely cannot be denied is the beauty of the S6. It truly is a gorgeous-looking handset – sleek and thin. The home button doubles as a fingerprint scanner, retaining the S6's clean look.

Samsung decided to dispense with Qualcomm's Snapdragon processor due to fears of the 810 overheating, so they went with its own Exynos 7420 processor. This has proven to be an excellent choice because the S6's benchmarking score vastly outstrips all of its Android rivals. This is also because

it's backed up by 3GB RAM, making it a powerful phone indeed. Its screen as well is unsurpassed, measuring 577ppi. This is truly breathtaking and its colour range is simply glorious as well.

The cameras make the most of Samsung's expertise in this field because although they don't pack the highest number of megapixels, they do take the best shots.

There have been a number of trade-offs in the S6 in the pursuit of a slim beautiful product. As well as the loss of the removable battery and SD-card storage, Samsung has also ditched its waterproofing. The slimness of the device also means that the camera lens protrudes from the back a little, which is a shame because it doesn't sit too nicely on the table. However, the S6 has introduced Quick Charge 2.0, which could be the pay off for the sealed battery.

The S6 is a truly remarkable phone and, while it isn't perfect, it's just about as close as you're likely to get and it has dropped in price quite dramatically since its launch.

Samsung Galaxy S6 **information**

Price **£499**

More information samsung.comSupplied by Samsung

technical specs

>> Operating system	Android Lollipop 5.0.2
>>> Processor	Exynos 7420 2.1GHz octa-core
» Memory	.32/64/128GB storage/3GB RAM
>> Dimensions	143.4 x 70.5 x 6.8 mm
>>> Weight	138g
>>> Display size	5.1-inch
>>> Display resolution	2560 x 1440 (577ppi)
>>> Connectivity	4G LTE, Bluetooth 4.1, NFC
>>> Camera	16MP rear, 5MP front

» head-to-head

Improvement on predecessor

There have been a few compromises, but few can deny that the improvement to the look and materials of the S6 is worth the loss of the removable battery. The screen quality increase is also immense.

Headline feature

It has to be the new design. A full metal and glass composition is something Samsung fans have been crying out for and finally it has been delivered. It looks incredible and feels great in the hand.

Value for money

While it was extremely pricey at launch, the S6 has dropped quite sharply in price, making it much more affordable. It is probably the best value of the four phones that we test here.

Design

Okay, we know we keep on about it, but the slick work here is a real winner. We like the fingerprint scanner in the home button and the heart-rate sensor, but we're less fond of the protruding rear camera.

>> Verdict

There are few things on the market that come close to the S6 in terms of style and specs, but no removable battery could prove an issue





HTC One M9 information

Price **£579.99**

More information htc.comSupplied by HTC

technical specs

" Operating system	Aliai ola oli Lollipop
» Processor	Qualcomm Snapdragon 810 2.0GHz octa-core
» Memory	32GB storage/3GB RAM
>> Dimensions	144.6 x 69.7 x 9.6 mm
>> Weight	157g
>> Display size	5.0-inch
>> Display resolution	.1920 x 1080 (441ppi)
>> Connectivity	4G, Bluetooth 4.1, NFC
>> Camera	20MP rear, 4MP front

»head-to-head

Improvement on predecessor

The M9 loses this category by a country mile. You have to look pretty hard to distinguish this from the M8 and a lot of HTC users haven't bothered with the upgrade. HTC rested on its laurels here.

Headline feature

The audio output from the M9 is one of the best we have ever heard. The sound is crisp, clear and the front-facing speakers make such a difference.

Value for money

At £579.99 the M9 is the most expensive of all the phones in this test, meaning it has to offer something the others don't. Sadly, we can't quite work out what that thing is, so it loses this round too.

Desigr

The M9 does look beautiful. It feels sleek in the hand without feeling like you'll drop it. It is understated yet classy and the colour options all look great. However, it looks disappointingly similar to the M8, so few innovation points are awarded.

» Verdict

The M9 has all the features of a true flagship device, but HTC could have done a lot more in differentiating it clearly from the M8



Stunning screen

The 1080p, 5-inch screen is utterly sublime. It is small yet mighty and the colour gamut is exceptional, as are the viewing angles. Both are essential for watching videos on a small screen by flagship standards

Twotone design

A new feature of the M9 is the addition of two-tone colouring. The silver handset is edged with gold, which we are big fans of. It's also available in plain gold or gunmetal grey





Limited life

The battery is a medium-sized power pack measuring 2,840mAh. This will give you around a day's average usage, which isn't bad, but it would have been more acceptable if the battery was still removable

Making sense

The M9 runs HTC's familiar and popular Sense Android skin. This is one of the few popular customised skins that are out there. It is light, original and easy to navigate around as it isn't too dissimilar to stock Android

HTC One M9

Looks great and works brilliantly, but why is the M9 already viewed as a disappointment?

The HTC One M8 was one of our favourite phones of 2014 so we had high hopes for its successor the M9. However, what emerged has generally been described as a fairly crushing disappointment. It still is a superb phone with stunning performance and design, but it just didn't represent a big enough shift from the M8. Unfortunately, the old adage of 'if it isn't broken don't fix it' doesn't really work in the field of Android phones where innovation and technological leaps are essential. Not only does each company have to convince customers that its phone is better than its rivals, they also have to convince them that it's better than its predecessor and therefore their customers should upgrade. Sadly, the changes from the M8 were evolutionary rather than revolutionary, which has hit HTC hard in terms of sales.

It's a real shame because this is a lovely phone. The Qualcomm Snapdragon 810 processor, backed up by an impressive 3GB RAM, makes the M9 an ultra-speedy device. It benchmarks higher than the G4 and X Style, but just below the S6. It is a gorgeous

looking handset as well with a rounded finish, metal casing and clean lines. The M9 really is a phone you enjoy looking at and feel proud using.

The other major advantages of the M9 are the speakers and cameras. The front-facing BoomSound speakers are top quality and you can really notice the difference when comparing it to its rivals. The rear camera is now a flagship-standard 20MP affair, with the UltraPixel technology being moved to the front of the handset. It is a somewhat strange choice given how much emphasis HTC put on UltraPixel in the M8, but as it wasn't a roaring success it seems like the manufacturer has taken the wise step of relegating it to the selfie camera.

Overall, this is a very competitive handset. It boasts top of the range specifications, looks great and works like a charm. However, it is so similar to the previous model that anyone who upgrades from the M8 will inevitably feel short-changed by their pay out. As a standalone phone it's brilliant, but as a flagship model it doesn't quite fit the bill.

Group test

Turbo charged

Fast charging is rapidly becoming very important to users. The Moto X Style has Turbo charging built into it that can deliver a stunning ten hours of battery life from only 15 minutes of charging time

Smartboost

The front-facing stereo speakers produce excellent quality sound and also comes with Smartboost. This creates a superb user experience no matter what kind of media you're listening to, whether it's movies, music or game effects



Quick camera

This phone is ideal if you need to take a snap. Quick Launch loads the camera up instantly, while Tap Anywhere means you can take a photo without the fiddly button

With the latest and greatest

The Moto X Style runs Lollipop 5.1.1, the latest version of Android before the Marshmallow rollout. Motorola devices are usually pretty quick to get the updates, so expect Android 6.0 very soon

Moto X Style

Does the latest handset from Motorola value style over substance or is this the ultimate mobile experience?

By naming its latest high-end device the Moto X Style, Motorola has had to make sure that it is the best looking handset on the market. Obviously beauty is in the eye of the beholder, but we believe that the majority will see that Motorola has done a pretty good job with the Style's aesthetics. The 5.7-inch display is right at the top end of the phablet market, but thanks to the remarkably thin side bezels, it can still just about be operated single-handedly. Although it is large, it does also look elegant, particularly with the swooping curve of the back-top edge of the device.

Customisation is at the heart of the Style and there are over 25 different backings that can be put onto the phone, giving you a vast array of looks and themes on the handset itself. Individuality is key in a world where a lot of handsets can look awfully similar to one another, so giving users the chance to choose the colour and texture of their phone's backing is a great move, especially as you can choose such outlandish options as leather or wood.

Inside the device is a Qualcomm Snapdragon 808 1.8GHz hexa-core processor, which is comparable to the LG G4 on page 62. We did notice it heating up pretty rapidly when playing a reasonably RAM-heavy game, so this model might not be suited to those of you who are big power users. However, if you are a power user, you will enjoy the 3,000mAh battery as that should give you a full day's usage. You'll also like the Turbo charging feature that will give you an awful lot of juice in double-quick time.

The screen must be mentioned as well. Flagship phones live and die by the quality of their displays and the Style's is quite stunning. The 2560 x 1440 QHD screen runs at 520ppi, so a little way short of the S6, but it is still fantastically bright and sharp. The colours pop so if you are big on watching videos and films on your phone whilst on the go then this should be a serious option for you.

This comes in at a lot less than its rivals in this test, but barely concedes any points in the specifications and is therefore a true flagship contender.

Moto X Style information

Price **£399.99**

More information motorola.comSupplied by Motorola

technical specs

>> Operating system	Android 5.1.1 Lollipop
» Processor	Qualcomm Snapdragon 808 1.8GHz hexa-core
» Memory	.16/32/64GB storage/ 3GB RAM
>> Dimensions	.153.9 x 76.2 x 6.1–11.1 mm
>> Weight	179g
>> Display size	5.7-inch
>> Display resolution	2560 x 1440 (520ppi)
>> Connectivity	4G, Bluetooth 4.1, NFC
>> Camera	21MP rear, 5MP front

»head-to-head

Improvement on predecessor

While there's no direct predecessor, it is a step up from the Moto X (second generation) that had a smaller battery and a lower resolution. The Style also has 1GB more RAM and a hexa-core processor.

Headline feature

Although we love the range of backing options, the screen really is a sight to behold. It's utterly glorious and is nearly edge-to-edge so it's only 4mm wider than the 5.2-inch Moto X (second generation).

Value for money

This is the cheapest of the four yet it doesn't compromise much. The 5MP front-facing camera and Snapdragon 808 processor are the only nods to cost cutting, so this represents superb value for money.

Design

The design is cool and edgy. As befits a phone called the Style, it looks fantastic and the vast range of alternative backs means that you will constantly be able to feel like you have a new phone.

>> Verdict

Rapid heating aside, this phone is a great flagship for a good price. It will give you a lot for your money, but it just falls short of ultimate specs







The Winner... Samsung Galaxy S6

The flagship phone battle rapidly became a straight fight between two handsets: the Samsung Galaxy S6 and the LG G4 are some way ahead of the chasing pack, but the S6 just edges it. It is by far the most powerful phone in the test and that is very important. It is also the best-looking and best-feeling handset out there thanks to its innovative metal and glass construction. It isn't perfect, but it certainly ticks more boxes than anything else.

The LG G4 comes a very close second. It is stylish and if a removable battery and SD card storage are important to you then this is certainly the one to go for. However, it does fall short in power and performance.

Third place goes to the Moto X Style. Its specifications stand up to the more expensive HTC One M9 and the screen is certainly sharper and brighter. We love the customisation options available and the cameras are great. The battery life is a little disappointing and the huge screen may be a little off-putting to some, but this is an excellent handset for those of you who don't want to break the bank.

Bringing up the rear is the HTC One M9. It's a shame because we do like it a lot. It's a stylish handset and is brimming with good quality features. We just feel let down because we've seen it all before. If you love HTC, you'll love this, but we wouldn't suggest upgrading to it from the M8.

	LG G4	Samsung Galaxy S6	HTC One M9	Moto X Style
Operating System	Android 5.1 Lollipop	Android Lollipop 5.0.2	Android 5.1 Lollipop	Android 5.1.1 Lollipop
Processor	Qualcomm Snapdragon 808 1.8GHz hexa-core	Exynos 7420 octa-core	Qualcomm Snapdragon 810 2.0GHz octa-core	Qualcomm Snapdragon 808 1.8GHz hexa-core
Memory	32GB storage/3GB RAM	32/64/128GB storage/3GB RAM	32GB storage/3GB RAM	16/32/64GB storage/3GB RAM
Dimensions	148.9 x 76.1 x 6.3 – 9.8 mm	143.4 x 70.5 x 6.8 mm	144.6 x 69.7 x 9.6 mm	153.9 x 76.2 x 6.1 – 11.1 mm
Weight	155g	138g	157g	179g
Display size	5.5-inch	5.1-inch	5.0-inch	5.7-inch
Display resolution	2560 x 1140 pixels (538ppi)	2560 x 1440 (577ppi)	1920 x 1080 (441ppi)	2560 x 1440 (520ppi)
Connectivity	4G, Bluetooth 4.1, NFC	4G LTE, Bluetooth 4.1, NFC	4G, Bluetooth 4.1, NFC	4G, Bluetooth 4.1, NFC
Camera	16MP rear, 8MP front	16MP rear, 5MP front	20MP rear, 4MP front	21MP rear, 5MP front
Overall score		建度度度度		

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Sony Xperia Z5

Barely three months after the disappointing Z3+, Sony attempts to fix things in a hurry...

Sony devices have always come thick and fast. After all, the original Z was only released in March 2013 and since then we've seen the Z1, Z2, Z3 and Z3+ (aka the Z4). However, the relentless pace of releases hasn't always been matched by an equal pace of significant innovation. Sony's approach has been one of evolution rather than revolution and at first glance it seems the same applies to the Z5.

You'd be hard pressed to tell the Z5 apart from its predecessor. It uses the same omnibalance design language, retains the stereo speaker positioning (which also is very similar to the Z2) and even has virtually the same dimensions, although it's actually 0.4mm thicker than the Z3+. Look carefully and you'll spot the main visual changes: the small, round power button has changed to a lozenge shape, the volume buttons have moved from the top of the right-hand side to the bottom, the back panel is now frosted glass and there are two new hues available for the device in gold and green to complement the graphite black and white that now has a silver back.

As a flagship device with a flagship price, the Z5 ticks all of the right boxes on the specification sheet. An octa-core Snapdragon 810 features, 3GB RAM and 32GB storage (with microSD expansion) are included and Android 5.1.1 is on board out of the box with a Marshmallow upgrade already confirmed by Sony. If you're concerned about the Snapdragon 810 processor and the notorious heat it generates, you're right to be as on the Z3+ it was a real problem. Thankfully for the Z5, Sony has utilised heat-pipe technology in the design (hence the relocation of the power buttons) together with improved software tuning to try to avoid this problem. While the device does still get warm, it doesn't get uncomfortably hot so this is a significant improvement. Most importantly, unlike on the Z3+, it doesn't force software to shutdown during normal use. When recording 4K video, the Z3+ would get unbearably hot, but the Z5 is still perfectly usable.



Sony is a company that has many business units, one of which is its imaging sensor division. This highly successful business, that produces sensors for almost all market-leading smartphones, has led many to question in the past why Sony phones haven't packed the very latest camera technology. Finally, Sony has put this right on the Z5, including an excellent 23MP sensor, improved software, 0.03 second hybrid

open - something we hope Sony will fix in a future software update.

The new lozenge shaped power button is found on the right-hand side of the device and now houses a fingerprint sensor. It unlocks in an instant, is extremely reliable and is the most intuitive of the various implementations.

These changes aside, it's business as usual for a Sony device, which is a good thing. The

"It's a great device featuring all the best that Android has to offer today

autofocus and SteadyShot software image stabilisation (no hardware OIS is included). The result is a camera that delivers both in technical benchmarks and in real use. Pictures are excellent, beating even the best Android cameras found on the LG G4 and Galaxy S6. Sony has finally tweaked its software so that the intelligent auto mode can operate both at full resolution or the default 8MP setting. Due to the high resolution of the sensor, the Z5 offers an effective five times lossless zoom in its standard mode, something that works exceptionally well. Our only camera complaint is that the app itself can sometimes take three or four seconds to

device is responsive, smooth and the software build is true to Google's Android vision while still adding Sony's tweaks and improvements. The Z5 has a full-HD screen, opting not to use QHD for performance and battery reasons and in our opinion the device is no poorer for doing so. Sony also has a 5.5-inch 4K screened Premium model to follow later for pixel fans!

We're not sure how long Sony can continue with its strategy of releasing devices with subtle tweaks and incremental specification improvements, but in the Z5 Sony has got it absolutely right. It's a great device featuring all the best that Android has to offer today.



Sony Xperia Z5

- >> More information sonymobile.com
- » Supplied by Carphone Warehouse

Best deal







£41.99

£44 (contract)

Technical specs

Operating system	Android 5.1.1 Lollipop
»Processor	Qualcomm Snapdragon 810
	2.0GHz octa-core
»Memory	32GB storage / 3GB RAM
»Dimensions	146 x 72 x 7.3 mm
»Weight	154g
»Display size	5.2-inch
>> Display resolution	1920 x 1080 pixels (428 ppi)
»Front camera	23MP
»Rear camera	5MP
»Connectivity	4G LTE Cat 6, Bluetooth 4.1, NFC
>> Expansion slot	microSD up to 200GB

Battery life



The 2,900mAh battery is down on its predecessors, but Sony has worked its magic for an excellent battery life

Good for

Being the photographers' friend

The Z5 is great for both casual snappers and more expert photographers with excellent auto features and full control

Preparing for life

If your device is ever in danger of getting wet through work or play, then the Z5 is the device for you

Bad for

No wireless charaina

It's disappointing to see Sony yet again neglect to include wireless charging. Maybe on the Z6?

The Z5 is priced well above some other flagships both on contract and particularly on SIM-free deals

Verdict

After a disappointing Z3+, the Z5 is a return to form. It's Sony doing what it does best, but remember it could be superseded in six months





Samsung Galaxy S6 edge+

Is the Galaxy S6 edge+ just a larger, more ungainly version of its 5.1-inch sibling, the S6, or does bigger really mean better?

Not so long ago a device with a 5.7-inch screen would be considered a monstrosity – a near tablet, hence the coining of the phrase phablet. However, with the prevalence of 5.5-inch devices nowadays, particularly in the midrange device space, the size no longer feels quite so outrageous. Perhaps all of this was partly behind the decision by Samsung to offer two larger devices this time around when it would traditionally just offer the Note series. The second device, which will be on sale alongside the Galaxy Note 5 in some markets (not in the UK that strangely neglects to receive the Note), is the Galaxy S6 edge+.

It's very easy to explain what the S6 edge+ is. It's a Galaxy S6 edge with a 5.7-inch screen

Bumper battery

The S6 edge+ battery is almost 20% bigger than the model found on the S6 edge, yet the device retains its thin 6.9mm profile. The Exynos processor is also particularly power efficient as one of the first CPUs to use a 14nm production process

Edge shortcuts

Sweeping in from the right-hand edge of the device provides quick access to a people shortcut panel. A second swipe provides the same for apps. At night-time, the edge becomes a handy clock with ultra dark black thanks to the Amoled screen

Wireless quick charging available

If you find you are running short of power, you'll be pleased to discover that the S6 edge+ supports not only Qualcomm Quick Charge, but also Qi wireless fast charging (with a £40 accessory). The device can charge from empty to full in two hours



SAMSUNG

rather than a 5.1-inch screen. It is Samsung's new luxury flagship, almost unashamedly brash in its size, specifications, finish and cost. On the specification sheet the device, of course, ticks every box. Superfast, Samsung-sourced octa-core processor? Check. A near ridiculous 4GB RAM? Check. Fingerprint reader? NFC? Superfast LTE? Fantastic 16MP camera? Naturally. It has all of the things that were present on the smaller sibling with the added bonus of a larger screen; the edge+ also has a 3,000mAh battery to make the form a bit less of a compromise over function.

The biggest talking point of the phone is its screen, of course this is bearing in mind that its glass front and back, metal edge and impeccable fit and finish are also good talking points. A showcase for Samsung's display prowess, the QHD Amoled panel that curves away at both edges is probably the best screen available on any phone right now. The colours are bright and the software is perfectly tuned to ensure that even when you're outdoors you can still clearly see what's on the screen (a traditional Amoled weakness). Bragging rights aside though, how useful is the curve? This is particularly important as the Note 5 is essentially a S6 edge+ without the fancy screen, but with the added utility of a stylus. As on the regular S6 edge, its use is limited. The feature for alerting to calls with a specific colour edge when the phone is face down feels like the only thing that couldn't be achieved with a regular screen. The night clock, swipe accessed contacts, apps and various tickers could in theory work just as well on the Note 5 as they do on the edge+. There's no denying that sweeping in on the curve feels good - our favourite third-party launcher Action Launcher 3 provides this for apps too - but it's not a completely unique experience.

One area where the curved screen also makes a difference is when it comes to holding the device. As the phone is only 6.9mm thick, it means that the edge of the device is particularly thin. This makes it a more delicate operation to pick the device up, less comfortable to hold in normal use and makes the buttons slightly more fiddly to press as they are smaller than on the device's non-curved relations. Then again, who said looking good was easy?

While the S6 edge+ perhaps isn't for everyone, particularly in its hero gold colour, there is still a lot to like and the device has very few faults. If you are looking for a device of this size, the two main choices are likely to be the edge+ or the new Nexus 6P. The Nexus also has a 5.7-inch Amoled screen, but it takes almost the opposite approach to this device: it is understated in design and has a stock-Android build rather than the much improved, but still distinctly Samsung software, that you'll find on the S6 edge+. Whichever way you look at it, the S6 edge+ is Samsung back at its best.



Samsung Galaxy S6 edge+

- More information samsung.com
- >> Supplied by Three UK

£629 (32GB), £719 (64GB)

Best deal







Technical specs

Operating system	Android 5.1.1 Lollipop
»Processor	Samsung Exynos 7420 2.1GHz octa-core
»Memory	32/64GB storage / 4GB RAM
»Dimensions	154.4 x 75.8 x 6.9 mm
>> Weight	153g
»Display size	5.7-inch
>> Display resolution	2560 x 1440 pixels (518 ppi)
»Front camera	16MP
»Rear camera	5MP
>> Connectivity	4G LTE Cat 6, Bluetooth 4.2, NFC
>> Expansion slot	N/A

Battery life



The 3,000mAh battery in the S6 edge+ delivers the all-day battery life its smaller sibling lacks

Good for

Impressing people

Particularly if you buy the gold model, you'll notice that the S6 edge+ turns heads

Snapping photographs

Together with the other S6 series devices, the edge+ has one of the best cameras on the market today

Bad for

One handed use

The S6 edge+ is difficult to use with one hand, by virtue of not only its size, but its narrow frame too

Value for monev

The phone is priced at almost double some other flagships, particularly the 64GB model

Verdict

If you want the ultimate Android phone, the S6 edge+ could be the closest you can get. It's not perfect, but it is an incredible machine





Honor 7 The western flagship phone for eastern budget prices

Despite making excellent phones at great bargain prices, Huawei has so far been unable to crack the western market. Whether this is due to a lack of an in-store presence or the fact that people mostly stick to the brands they know and trust, is yet to be fully understood. However, the Chinese company has now taken matters into its own hands by creating an offshoot company with a more west-friendly name that targets a younger market.

That company is Honor and it is rapidly making a name for itself by making phones with excellent specifications at very low prices, and consequently putting it in direct competition with the familiar Moto G range as well as fellow Chinese manufacturers Xiaomi and OnePlus. Its latest offering is the Honor 7, launched across Europe to a great fanfare alongside Huawei's new online store vmall.eu. It had already made headlines across the world before its European launch after an online flash sale in China resulted in all 200,000 available phones selling out in just two minutes alone. So what makes this new handset so desirable?

In a nutshell, it combines premium materials and top specifications for a very low price. The Honor 7 is encased in aluminium, which makes it look classy and feel smooth without adding too much weight. It comes in three colour options, grey, silver and gold, so you have plenty of choice when buying. It is very iPhone-like in its shape and layout, presumably a deliberate choice in order to lure in people who love the Apple look, but want Android's customisation.

As we're on the subject of Android customisation, we have to mention the Honor 7's custom UI Emotion. It's horrible. The app icons are a dull, washed-out grey and some of the images themselves are unnecessarily tricky to decipher. It is just ugly and there is no app drawer available, only another menu across from the homescreen. Huawei must have been aware that its skin was very unpopular so to attach it to its breakout handset feels like a bad move. Stock Android would have given users that familiar feel that might just have convinced them to abandon the likes of Samsung or LG and then taken a risk on this new brand.

Looking beyond the skin, however, you find a really good specification sheet. The Honor 7 boasts a Kirin octa-core processor, of which four processors clock 2.2GHz and the other four 1.5GHz. The 3GB RAM keeps it moving along at an impressive speed and it's powered by a 3,100mAh battery. Despite its size, the battery doesn't offer the longevity you'd expect. You'll generally get just over a day with average usage, which is a disappointment as rival phones can

Say cheese

The front camera is an impressive 8MP and features Groufie and Beauty modes. The former lets you take a wide-angle selfie while the latter flattens out your skin. removing any imperfections to create a cleaner, albeit slightly scary, look

Powerful pixels

At 424ppi, the full-HD screen is supremely sharp and the colour gamut is fantastic. The colours on screen are true and the overall user experience is excellent. This screen doesn't fall far short of the Galaxy S6 or LG G4

Negative emotions

Honor continues to persist with Huawei's unpopular Emotion UI. This Android skin has not been received well by the western market and Honor could have benefitted from sticking with stock Android as it targets a younger and much more technologically-aware market

Edgy design

The side bezels on the Honor 7 are remarkably thin, almost giving users an edge-to-edge display. While the design is clearly inspired by the iPhone 6, Honor has still done a good job in creating a very attractive Android phone



Review

do that with a much smaller battery. Its benchmarking scores are exceptional, ranking above the likes of the Samsung Galaxy Note 4, Asus ZenFone 2 and only falling a little short of the HTC One M9. Clearly this is a mighty machine and you can feel the speed when browsing and playing games, all of which happen incredibly quickly and smoothly.

The cameras are very promising too. The rear-facing 20MP snapper is really sharp and focuses at speed, while the 8MP camera on the front takes reasonable selfies. Beauty mode is a standard feature and Honor's camera app offers a series of different sliders for customisation.

We can't finish this review without mentioning the Honor 7's smart-key button that you can customise to perform a range of tasks, such as activating the torch light, taking a screenshot or even opening up any app. You can set up to three commands for this button, one to activate after a single tap, one after a double tap and a third after a tap and hold, so that one button can be a camera or a Facebook and Google Now launcher all in one.

Barring the shoddy UI and the lower-thanexpected battery life, this truly is an excellent phone that is more than capable of cracking the young western market.

Fingerprint scanner The fingerprint scanner is on the back of the handset. It is quick to set up and recognises your fingerprint surprisingly quickly, enabling you to unlock your phone without the need for a password or PIN code. It is also very subtle, which is another great positive Mostly metal The Honor 7 is predominantly made of aluminium, but the very top and bottom of the handset has a metallic-effect plastic. This detracts slightly from the overall premium feel yet doesn't spoil the look too much and saves on costs

Honor 7

£249.99

- >> More information hihonor.com
- >> Supplied by Honor



Best deal



£20 p/m 500MB, 600 minutes, unlimited texts £23 p/m 1GB data, 600 minutes, unlimited texts £26 p/m 2GB data, 600 minutes, unlimited texts

Technical specs

>> Operating system	Android 5.0
»Processor	HiSilicon Kirin 935 2.2GHz quad-core & 1.5GHz quad-co
»Memory	16GB storage/3GB RAM
»Dimensions	143.2 x 71.9 x 8.5 mm
>> Weight	157g
»Display size	5.2-inch
>> Display resolution	1920 x 1080 px (424 ppi)
>> Front camera	8MP
»Rear camera	20MP
»Connectivity	4G, Bluetooth 4.1, NFC

Battery life



The battery life from the 3,100mAh battery is good, but not as good as it should be

>> Expansion slot.....microSD (up to 128GB)

Good for

Screen quality

The full-HD display is gorgeous, bright and full of deep rich colours

The 3GB RAM that's backed up by a speedy octa-core processor makes this phone lightning fast

Bad for

User interface

Honor would have been better off avoiding the ugly, poorly-designed Emotion UI

Not terrible, but you'd expect to get more juice out of a battery this size

Verdict

This has the potential to be a brilliant phone and is exceptional value for money with only two real negatives





Xiaomi Redmi Note 2

Xiaomi is huge in China, but how does its latest large-screened device hold up against the UK market?

If you're in the market for an entry-level to mid-range device, the choices have never been better than they are today. Extremely capable devices, such as the Moto G, Alcatel OneTouch Idol 3, Vodafone Smart ultra 6 or the Sony Xperia M4 Aqua, mean you are very much spoilt for choice. But what if you're after something a bit different? Perhaps you want to sample a device from the wildly popular Xiaomi range from China? The Redmi Note 2 would be a great place to start.

In China, the Redmi Note 2 starts at 799 yuan, which is just over £80. By the time you've added delivery and tax charges, the final price is likely to be around £120, which still considerably undercuts all of the phones listed above. So it's unquestionably cheap, but what do you get for your money? You get a finely built, well-specified and mightily impressive device.

The Note 2 (that doesn't have a stylus despite the name) has a 5.5-inch IPS screen with capacitive buttons below in the typical Chinese layout (menu, home, back) and a soft touch finish on the back of the device that is removable.

The buttons have a satisfying click, there's no flex or creak and the device is very well put together. A silver accent around the rear camera and a stylish silver 'Mi' logo on the back complement the look, giving an overall feel that belies the budget-price point. What is more, the device is only 8.3mm thick despite the generous battery size.

At the heart of the device beats a Helio X10 processor, complemented by generous 2GB RAM and 16 or 32GB storage (expandable via microSD). The device positively zips along with the unconventional, but often impressive, MIUI version of Android. It offers considerably more control than stock Android regarding device permissions, autostarts and background services, all of which help make the most of the battery. Although the device is Chinese, that is not an issue from a language perspective: MIUI is fully localised to English and the Mi Market store app can be replaced with the more conventional Google Play store app.

Both the front (5MP) and rear (13MP) cameras take great pictures, with a host of different

Fast focusing

The 13MP camera, provided by Samsung, includes support for phase-detection autofocus. This enables the camera to focus in less than 0.1 seconds. A five part, 78-degree-wide angle lens and f/2.2 aperture ensure high-quality shots

The MediaTek Helio X10 processor The Note 2 uses a MediaTek

The Note 2 uses a Media lek Helio X10 processor running at either 2GHz on the 16GB model or 2.2GHz on the 32GB. The octa-core 64-bit chip is paired with 2GB dual-channel LPDDR3 RAM for a smooth performance

Wed, September 16

Multiple colour options available

It is becoming a less common feature on today's devices, but the back of the Note 2 is removable and the battery is replaceable. There are a number of coloured backs including white, grey, yellow, blue and pink

Great connectivity

Connectivity is very extensive on the Note 2. It supports dual band 802.11ac Wi-Fi, has LTE support as well as dual-SIM slots and supports Bluetooth 4.0. NFC is not included as is generally the case with Chinese devices



Camera



Review

capture modes including live Instagram style effects, a Scene mode with presets such as portrait, landscape and sports, as well as a fun Beautify mode. A Manual mode is also included. When shooting video, slow motion and time lapse video are supported.

The single speaker found on the back of the device is no substitute for good front-facing stereo speakers, but it still turns up nice and loud without any distortion. A small piece of plastic on the back ensures the phone is lifted slightly from a flat surface so that the speaker isn't completely blocked.

The Note 2 supports LTE on bands one, three and seven, which means you'll get 4G signal on Three and EE, but not on O2 or Vodafone (and

their respective MVNOs). Both phone and Wi-Fi signal strength are excellent, no doubt helped by the plastic body of the phone. As is common in China, the device has dual-SIM support.

We've long been approaching a time where the cheapest of Android phones could offer everything that a power user could need and the Redmi Note 2 is a great example. Even when switching to it from a flagship, the performance doesn't feel limiting, the screen is excellent and MIUI, while it might not be to everyone's tastes, is very well executed and also feature packed. If you want to try Xiaomi's OS before you make the decision to buy, there are a large number of third-party devices that have MIUI images available from en.miui.com/download.html.

MIUI 7 Infrared blaster Xiaomi's heavily customised The Note 2 includes an IR blaster version of Android is called together with Xiaomi's own MIUI. The Note 2 ships with application. While this isn't version six, but a test release tailored towards UK channels, of version seven is available the hardware is still fully that is also updated weekly. compatible with third-party apps. Google services aren't such as Peel, enabling you to included, but they are very control vour entertainment Ma easy to install devices from your phone 8月13日 周四 allery Music Themes m App Store Tools Security

Xiaomi Redmi Note 2

799 CNY (approx £82)

- >> More information mi.com/note2
- >> Supplied by Chigon Technology Co



Technical specs

MIUI 6 / 7 (Android 5.0.2)
. MediaTek Helio X10 2.0GHz or 2.2GHz octa-core
16/32GB storage/2GB RAM
152 x 76 x 8.3 mm
160g
5.5-inch
1920 x 1080 (401 ppi)
5MP
13MP
4G LTE, 802.11ac dual-band Wi-Fi, Bluetooth 4.0
microSD (up to 32GB)

Battery life



The 3,060mAh battery and advanced power saving features mean the Note 2 has a long-lasting battery

Good for

Value for money

Even after the costs of importing, such as duty and VAT, the Note 2 is still a bargain

Big screen entertainment

For big screen gaming or video playing, the Note 2's large, excellent screen and loudspeaker are ideal

Bad for

No stock Android

If you like your stock Android, then Xiaomi devices probably aren't for you. MIUI is very heavily skinned

Warranty claims

Importing devices can save you a lot of money, but warranty claims can typically take a lot longer

Verdict

The Note 2 is an incredible phone for its price. It offers something quite different, but also very enjoyable





Neptune 5,200mAh Rugged Power Bank

STK's new power bank tops up charge on the go

Five years ago, there wasn't really a market for portable-power banks that could give our mobile devices a mid-afternoon boost. Most of us didn't have smartphones with great capabilities, so the pressure on battery life was very little. How times have changed! While some Android phones promise a two-day battery life, power users are still falling short of those statistics and require a back-up plan. Step forward STK and its Neptune Rugged Power Bank. Compatible with any USB charger, the Neptune will give you two full charges of your device, calming any fears you may have of losing juice. It does take the best part of seven hours to fully charge your phone, but in an emergency that's going to be irrelevant as your device will perform just as well on five, six or seven per cent as it would on 80 per cent. The unit itself is very light, so much so that'll you'll hardly notice it in your bag. The build quality isn't the best with plastic tabs that cover the connection ports not sitting anywhere near flush to the unit. However, at this price and considering it's waterproof, shockproof and dustproof, you're willing to sacrifice something. Just not your battery life.

- » Price £39.99/€54.99
- » More information stk-acc.com





You get a torch and SOS-signal light too



The power bank holds two full charges

Charging

With your phone's charger attached (it works with any USB charger), just press the power button to start charging. Up to three green dots will flash, depending on how much charge is left.

Robust

Shaped like a grenade, STK's Power Bank has a rubber shell that will protect it from almost anything. The unit is IP67 certified, meaning you'll be able to take this into the harshest environments.



Cowin Thunder Speaker

Cowin enters a busy market with its portable, battery-powered speaker

Another month and another Bluetooth speaker up for review. So what makes the Cowin Thunder speaker different from the packed portable-speaker market? Well, the Thunder includes built-in vibration technology called Lightning mode that looks to turn whatever surface (wood, glass, metal, plastic) it's sitting on into a surround-sound, 360-degree speaker. Sounds a bit gimmicky, but how does it fare? Well, a lot depends on the surface you're putting it on. For example, stick it inside a cardboard box and you get the kind of 360-degree amplification you imagine. It's like sticking your smartphone's tinny speakers inside a plastic cup

at a festival, but put it on a normal household surface and the effects are a bit more hit and miss. The suction cup that keeps the speaker in place has a firm grip, but it's not firm enough to hang it from a wall. As a result, the speaker sits about five millimetres from the surface, which helps to create the vibration effect that you can actually feel. The sound quality is respectable and the bass is definitely there, but never at the expense of the mid-range or vocals. After multiple hours of use, the sound settled down quite nicely. Throw in the brilliant punched-out chrome look and you've got a nice little speaker.

Controls

All the controls are placed on top of the speaker. There's the bog-standard playback controls and, most importantly, the Lightning mode activation button in the middle. We love the white and chrome design.

- » Price £89.99/\$114.99
- » More information cowinmusic.com



Vibrations

When the Cowin Thunder is stuck down to a surface the novel vibration mode comes into its own, creating an effect that gives off the impression of 360 degree surround sound. It works better than we expected.



The aluminium casing makes it light to carry around







YouTube Gaming All your favourite gaming channels and more



While gaming channels and live streams were already part of YouTube, Google has now spun

these off into a dedicated YouTube Gaming website and app, so that you can find all your gaming goodness without the distractions of cat videos. In addition, it seems that Google is challenging the earlier dominance of the rival (Amazonowned) Twitch service in a battle to the death... or game over. It will be interesting to see how it plays out, particularly with YouTube Gaming's new focus on live streaming. While Twitch already prohibits its content providers from broadcasting the same live stream on other services, there are stacks of content available on YouTube Gaming and plenty of big names in the gaming world.

As you might expect, the Android app offers a very similar interface to the web portal, with the main selection of videos shown in the middle, trending games on the left-side panel and featured channels on the right. Happily, touch control

Viewers can type comments while watching live streams of games

makes it easier to navigate than the desktop website, enabling you to quickly scroll through the lists without having to continually press page down. The narrow side panels can be expanded to identify the items (not always obvious from the icons) and see more details. When you find a game or channel you like, you can tap the star to add it to your favourites list. Handily, if you already subscribe to any gaming channels in standard YouTube, you get an option to import them. So it's easy to find all your favourite content whenever you load the app. Naturally, there's also a powerful search facility that lets you filter results by upload date.

Whichever game or channel you select will show up in the middle, where you can then swipe between various tabs including custom categories created by the content provider. If it's a game, you can view its Wikipedia entry. There's also a tab for live streams, so you don't have to wade through lots of recorded clips. Live streams seem to run smoothly, although there's sometimes buffering or an advert when starting. Perhaps the biggest advantage over



Browse games or channels in the side panels and add them to your favourites

Twitch is the ability to pause a live stream and then resume so you don't miss anything. A Chat tab lets you interact with others by typing comments, while a handy Suggested tab offers related content you might be interested in. As in the standard YouTube app, you can expand the video to fullscreen or swipe it down to an inset while you browse for other content. You can also cast to a Chromecast to put the action on vour television screen.

Overall, the app is easy to navigate and works well. The only thing

missing (at the time of writing) is the ability to live-stream footage from your device, although Google has announced that this is on the way. For more information on how to do this, check our tutorial on page 42.







Adblock Browser for Android Remove annoying ads and disable tracking

One of the most annoying things about surfing the web is the constant deluge of

adverts appearing at the sides or even in the middle of the content you want to read. Not only are they a distraction, they slow down page loading and use up extra mobile data when you're out and about.

Adblock Browser aims to solve the problem. While Adblock Plus is already available as an extension in Firefox and Chrome, its developer says that creating its own standalone browser "gives us a lot more freedom to integrate ad blocking as a first class feature that's easy to understand and configure." It also enables ad blocking on encrypted connections, which wasn't possible previously.



Based on Firefox, Adblock Browser does what it says on the tin, blocking all adverts by default, apart from nonintrusive 'acceptable' ones. It is highly configurable, however, so you can add custom filter lists and disable things like tracking, malware domains, anti-ad blocking messages and social media buttons.

The default search engine is the open-source DuckDuckGo, but this can also be changed and typing in the search field at the top will result in a list of alternative search options, including Google, Bing and Yahoo. Other than that, DuckDuckGo functions as a standard browser with all of the usual features, such as tabs, bookmarks (importable) and private browsing mode.

Look, no ads! There's an option to turn them back on if you want them

In our tests, Adblock Browser did a good job of blocking adverts, including omnipresent banners and video ads. On the downside, some pages took noticeably longer to load than in Chrome and scrolling up and down wasn't quite as smooth. The upside, however, is that there's no loading of adverts. So, on balance, for those who loathe obtrusive ads and worry about privacy, it offers an improved browsing experience.

» specification

Price **Free**

Designed for: Phone and tablet Requires Android: 2.3 and up

» verdict

Great at removing annoying adverts, although page loading can be a bit slow



» like this? try this!



Fans Choir – Football

Create your own football lineup and formations then rate your players and select the man of the match



We've seen plenty of football apps, many crammed with features. Fans Choir – Football is a far simpler affair. After selecting an English Premier League team, you're shown the next scheduled fixture (you

*** 000

can also flick to the previous or following one). Predictions, the first of three main options, lets you predict the scoreline, key player and first scorer. The Formations option lets you alter the formation and swap/substitute players. Finally, the Ratings option is for awarding post-match marks for each player.

After making your choices in any mode, you can share them via social media. And... that's about it. No match results and/or scorers are ever provided for easy access to your predictions.

- » Price Free
- » Designed for Phone
- » Requires Android 4.0 and up



Add your post-match player ratings, then share

them with friends on social media >> best free SQUAWKA FOOTBALL APP >> Live match and player statistics alternative viewable on a pitch diagram, plus social chat.

Mirrativ

Live stream any game or app on your screen



While YouTube Gaming so far lacks a broadcast function, Mirrativ offers

just that. So long as you have Android 5.0 or above, you can live stream any game or app and chat to viewers (with typed comments) in real time, Periscope style (with an optional inset view of your face). As well as for gaming, we can see this being used to provide tutorials for



apps. Like many other users, however, we kept getting a message about an unstable network. suggesting we switch to low-resolution.

- » Designed for Phone and tablet
- » Requires Android 4.1 and up



Cocktailer

Mix your favourite drinks



A beautiful Material Design interface sets this apart from the countless

cocktail-mixing apps available in the Play store. It looks good enough to drink as each featured cocktail has its own lovingly drawn artwork. The downside is that it offers a paltry 18 recipes at the time of writing. In addition, the 'search by ingredients' function is fatally flawed, only returning results if you enter all the



ingredients for a particular cocktail. Enter 'vodka' say on its own and you'll get nothing. Cocktailer could be good, but it will still need a major shake up first.

- » Price Free + IAPs
- » Designed for Phone
- » Requires Android 4.0.3 and up





Splyce

The automatic music-mixing app

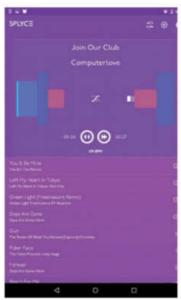


Like having a DJ in your pocket, Splyce automatically mixes the

tracks on a playlist. It offers some cool transitions between tracks too, including vinyl stop, brake and echo freeze. While these are selected automatically, you can also toggle each type on or off. IAPs are required to unlock some features, but it's only £1.81/\$2.99 for the whole set.

One thing to note is that you can only mix locally stored music as it lacks the iOS version's ability to stream from Pulselocker. Splyce analyses songs added to a playlist, while we found that it sometimes doubled the true BPM of a track, this didn't affect the mixing. The playlist can be sorted by BPM (rising or falling) or arranged manually.

Tapping a playing track's name reveals a graphical view of its elements. The only playback controls are pause and skip. Mixing options include mix mode, maximum track length, mix time and a lighting option - either flashing the screen or a light bulb. If you're after a party-friendly music player, Splyce could fit the bill.



Splyce can automatically handle the transition from one track to another, done here with an 'echo freeze'

- » Price Free + IAPs
- » Designed for Phone
- » Requires Android 4.0.3 and up

Google Street View

Explore the whole world in 360 degrees



We just had the trip of a lifetime. First we explored the canals of

Venice, then we hiked up to the Inca citadel of Machu Picchu, swam with the fish just off the Great Barrier Reef and looked around an old Royal Navy submarine. And all in a day without leaving our chairs!

Previously a companion app for Google Maps, Street View is now

a fully fledged app of its own that's designed to show off the countless 360-degree 'photo spheres' captured by Google. As well as exterior scenes, these include interiors of certain buildings, such as museums and galleries.

Scroll around the world map and you'll see lots of red dots, each representing a photo sphere; zoom in for even more or just search for a location. Wherever you're looking,

the bottom panel can be swiped up to show previews of spheres taken in that area, so it's easy to find what you're after. In addition, a Collections tab shows themed collections, such as art projects or oceans. One slight flaw is the inability to search for a particular collection, so you have to scroll through them.

When a photo sphere is selected, you can either swipe around the view or use the compass option to rotate



You can look around the interiors of some buildings, such as museums



of photo spheres to browse

Drivemode The driving interface with no need to look at the screen

While some in-car interfaces are full Android launcher replacements,

Swipe up the bottom panel for previews of photo spheres in the map area

Drivemode is a pull-out panel that can easily be disabled via the notifications panel. It uses speech to describe things on screen, so you don't need to look at it. Just swipe up or down between the main options. You can call or text someone via Contacts after searching for one by voice or swiping through favourites. Drivemode can also respond to calls with preset messages and read out received text messages, although there's not yet an option to respond

via voice as there is in the Agent app. The Music option lets you tap the screen to play or pause (in the chosen music player) and swipe left or right to change tracks. A Navigation option links to Google Maps to provide step-by-step directions on a map where you can set favourite places too. Finally, Settings contains a bunch of options, including driving detection.

- » Price Free
- » Designed for Phone
- » Requires Android 4.0.3 and up







AGENT - DO NOT DISTURB & MORE » Drive mode lets you respond by voice to texts; Agent also remembers where you're parked.



In music mode, tap the screen to pause or play; swipe to skip tracks

it as you turn the device - it's almost like being there, although there is a slight wait as it renders the image fully. You can swipe the bottom panel left or right to quickly switch to another sphere in the area or collection, so it's great for random browsing and could keep you entertained for hours.

Fancy taking your own photo spheres? There's an option to do just that with your camera (if the device supports it), by panning round the scene. For better results, you can buy a 360-degree camera to attach, although they're pretty pricey.



» like this? try this!

Google Earth

through three-dimensional cities.

Access exterior Street View scenes and fly

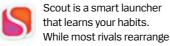


Scout's main homescreen delivers content. including music and video, on cards



Scout Launcher (Beta)

A smart launcher, but with a difference



the apps on your screen according to location and time, Scout places relevant content on the homescreen via Google Now-style cards.

Upon first launching Scout, sign in with a Google account and add important locations. There's also the option to give it access to your notifications to manage them. Finally, you can set up 'smart spaces'

for app categories - each one is given its own homescreen, accessed by swiping left from the main one.

As well as cards for music, calendar, dining and weather, the main screen offers news, reddit posts, SoundCloud tunes and YouTube videos. It's a clever concept that seems to work well, although we experienced a few issues when using media playback.

- » Price Free
- » Designed for Phone
- » Requires Android 4.1 and up





based on the time of day and your location.







Stagelight: MIDI and Audio DAW Free + IAPs

Interactive tutorials make this sophisticated music-making studio easy to use. Extensive features include a DJ-style loop builder, traditional timeline, drum machine, key lock and automation of track effects.



Audio Evolution Mobile Studio £4.49/\$6.99 + IAPs

This virtual music studio offers multi-track recording with some cool sounds and effects, including time stretch and pitch shift. As well as virtual instruments, it supports over 250 USB and MIDI interfaces



Ninja Jamm Free + IAPs

This innovative remix app enables you to mash up

beats, loops and samples. While it's limited to a selection of songs and sample packs, playing around with them is compulsively fun.



djay 2 £2.99/\$2.99

Algoriddim's djay 2 app lets you mix tunes on twin

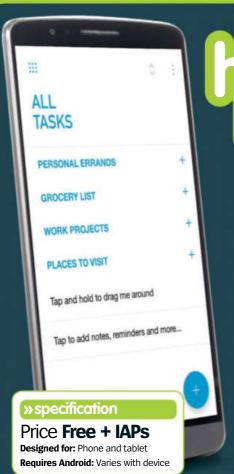
turntables, including Spotify tracks (for premium subscribers). Extensive DJ tools include samples, effects, key lock and a waveform view.





befuddle you, give this 'groovebox' a try. Fiddle about with the waveforms, effects and drum/note patterns until you like what you hear. A Pro version (£7.63/\$9.99) offers extra features.





Which app is the best for keeping vour to-do list organised

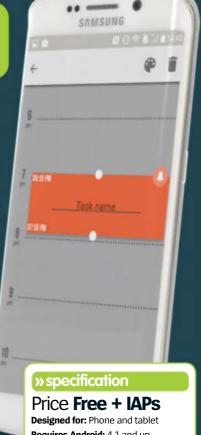
ANY.DO

Most Android phones ship with a calendar app, but a fully-fledged planner is often much more useful for organising your life. We see how



'Accomplish: To-Do list reborn' stacks up against the established 'Any.do: To-do List | Task List'.





Requires Android: 4.1 and up

Any.do: To-do List | Task List

Accomplish: To-Do list reborn

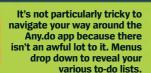


Registering for Any.do is very quick and easy, provided you are already signed into Facebook or Google. You can begin using the app within

minutes of downloading.

can set recurring tasks.

Tap the floating button, then type in your reminder and add it to one of your lists. It is very simple to type, but not as easy to add it to a list. You



The colour and font on Any. do is easy to read and the design is neat and clean. It's easy to distinguish the groups that contain tasks you have added.

You can edit your preset groups to ones that you'll actually use. There are some quite cool animations that will show you your plans for the day.



EVENT CREATION







Getting started with Accomplish takes a little longer, but it's only because you go through several tutorial screens. You can swipe through these quickly.

Reminders are either typed in or manually added to the calendar. It's nice to have the option of time-specific or general reminders that are clearly separate.



Once you get used to dragging down the top bar to see the calendar, Accomplish is easy to move around. Ideally, days with events should have been highlighted.

Accomplish is distinctively designed, but not particularly

attractively. It sometimes looks and feels a bit messy,

especially when the sidebar and calendar are pulled out.

You can change the colour of the task background. More

importantly, you can schedule

how far in advance you want

to be warned of an event and

set recurring events.





And the winner is...



In terms of easily planning your day and your week, Accomplish is far superior, although it does lose out in the design stakes. Any.do is better for general tasks, but Accomplish works better as a forward planner. Its key features are just a little easier to use than Any.do's.

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Star Wars: Uprising This action game is very slow progress



Being Star Wars fans, we're always up for another spin-off game. Set just

after the events of Return of the Jedi and before The Force Awakens, this one certainly grabbed our attention. You take on the role of a smuggler who's trying to work off his debt during the Empire's iron blockade.

It turns out to be a free-to-play action RPG that's strangely reminiscent of last year's 'Spirit Lords', also developed by Kabam. As in that game, your custom-created hero (choose from four races and various physical attributes) is controlled via touch-in bird's-eye view levels and you can activate special abilities using similar swipe and tap gestures. For instance, tapping the hero activates the currently equipped self ability, while tap and drag triggers a directional one, such as holding out the blaster for a salvo of rapid fire. Double tapping elsewhere activates a



Story missions are obtained from 'Happy' Dapp in the Cantina



Drag back to trigger the directional ability; here a rapid-fire blaster salvo

targeted ability, starting out with a diving roll. There's also an iconactivated ultimate ability that's charged up during battle. While quite simplistic – including the auto-targeting of your enemies combat proves enjoyable and becomes a tad more tactical later on as foes get tougher so you need to make use of your abilities, particularly when you're up against bosses. What's not so great is that most missions are pretty formulaic affairs as you take on waves of enemies in samey locations.

Still, the RPG side of the game is fairly deep as you gradually level up not just your character, but their equipment too, using collected materials and gaining new items from completing missions. The opportunity to chat with other players to arrange co-op assault missions and join a cartel adds to the experience.

However, the main story missions require a minimum character level to play, so the opportunity to earn XP and other loot soon becomes limited. To level up, you'll need to take part in other missions, but even

the assault ones are limited to five per day. Participating in sector battles is a good way to earn some new rewards, but they're only unlocked once you've filled the battle readiness meter for a planet by completing assaults. So, to speed up your progress, you may well be tempted by the dark side: IAP bundles of in-game currency.

- » Price Free + IAPs
- >> Designed for Phone and tablet
- » Requires Android 4.0 and up



what we've been playing



Lara Croft GO £3.99/\$4.99

This turn-based tactical take on Tomb Raider, akin to Hitman GO, captures its essence and works really well. Tricky puzzles involve pulling levers, dodging traps and shooting animals.



Card Crawl Free + IAPs

We're hooked on this fantasy solitaire-like card game. The strategy revolves around making the best use of the cards you're dealt in order to defeat monsters and keep your knight alive.

Recommend a game



Cute Things Dying Violently

Save the animals! Or you may not want to...



While the aim is to guide your cute critters safely to the exit, it's highly amusing

to see them impaled on spikes or sliced in two by a circular saw. Control is simple: drag a creature into position, then hold and drag to catapult it into the air. Items such as crates and springs can also be moved or flung, helping you guide



Oops, a critter just got sliced in half

critters and hit buttons to remove barriers or activate bombs. Critters can be bounced off walls, which requires some precise aiming. An optional trajectory graphic helps, but you need to turn it off for a perfect score. While there are just 48

single-player stages, you can create your own with the built-in level editor.

- » Price £0.80/\$0.99
- » Designed for Phone and tablet
- » Requires Android 2.3 and up



Pokémon Shuffle Mobile Got to match them all!

Already a big hit on the Nintendo 3DS, this monster match-three game shuffles onto Android and looks pretty much identical to the original. However, all is not quite as it seems as the prices of special items – to help you win stages and capture Pokémon - have been sneakily increased some quite dramatically. While items can be bought using in-game coins earned from completing the various stages, the mobile game is stingier in handing them out. Coins can also be gained by exchanging rare jewels that are naturally also available in IAP bundles. While the game is playable without the IAP, it requires a fair bit of grinding and you'll need to wait quite a good



battle to make them more powerful

while for hearts as one is required for each battle in order to recharge once you have run out.

The match-three battles are still good fun to play. Rather than swap adjacent Pokémon pieces, you can switch any two on the grid you like to make matches, sometimes completing two in the process for a great combo. Special powers can also be activated and there's some strategy in the selection of which Pokémon to use on each of the stages. There's also the satisfaction of building up your Pokémon collection and attempting to win rare ones in special challenges.

- **Price** Free + IAPs
- **Designed for** Phone and tablet **Requires Android** 4.1 and up

Nibblers Free + IAPs

The Deer God

A candidate for the strangest

£3.85/\$4.99

two-dimensional platform adventure

with RPG elements sees you control a

deer (a reincarnated hunter), eat food. attack enemies and solve puzzles.

game of the year, this pixel-art

Games to look for

Rovio's latest match-three game stars the cute Nibblers: fruit-loving fish! Match fruits to stun and defeat the lizards in each grid, using the Nibblers' special powers to help you on the way. Fun though formulaic.

Door Kickers £3.99/\$4.99

This tablet-only tactical title is a creditable conversion of the excellent PC game. The top-down-view action takes place in real-time as your SWAT team battles baddies in various scenarios.



Goat Simulator MMO £3.99/\$4.99

Coffee Stain's third goat game expands the crazy concept to the MMO RPG genre. Pick from five caprine classes, complete quests and level up your goat! Buggy and bonkers, but it's still a good laugh

DefCom TD £0.79/\$1.00

An old-fashioned real-time strategy game, it's not as sophisticated as some out there and there's sadly no human multiplayer. With randomly generated maps, however, it offers good value for money



Walking War Robots Free + IAPs

This one evokes fond memories of the classic MechWarrior series as it sees you piloting your armoured Goliath in epic and very explosive multiplayer battles. IAPs speed up the mech upgrading, essential for progress.



Dungeon Boss

Cute and colourful monster battling



This simplified RPG game is so casual, you can even press a button for automated monster battling. Each stage comprises a series of fights

with one or more monsters, culminating in a boss battle. As you progress, you'll collect more characters, each with different elemental strengths and special attacks that take several turns to recharge. As you'd expect, a lot of the game involves collecting treasure and levelling up fighters. The gameplay is fast and smooth, and the cute graphics are appealing with some spectacular special moves. The main downside is the slowly recharging energy required to battle, but you're given a generous amount early on; IAP bundles of coins are available to help speed progress, but aren't essential. An MMO element sees you raiding other players' dungeons and fortifying your own.



- » Price Free + IAPs
- » Designed for Phone and tablet
- » Requires Android 4.0 and up





Take over a gun-toting guard to shoot that droid, then

Infestor Take over humans



With the alien protagonist taking possession of other characters to make use of their abilities, Infestor reminds us of the classic Abe's Oddysee

games, despite its crude pixel-art visuals. On each two-dimensional scrolling-platform level, you guide the slug-like alien safely to the exit using on-screen controls. Taking control of humans enables you to jump high, push crates, open doors and shoot enemies. Terminating the possession results in the alien being flung high from the disintegrating body. With a limited number of humans, it's obvious what you need to do, so it's more about timing and precise jumping than puzzle solving. The difficulty does ramp up, however, so you're not likely to complete the 60 stages too quickly. It's fun, but unforgiving and restarting a stage due to one mistake can be frustrating.

- » Price £0.59/\$0.99
- » Designed for Phone and tablet
- » Requires Android 2.3 and up





Power Ping Pong

Table tennis with a great kung-fu kick



Whether you call it table tennis, ping pong or wiff waff, it's hardly the most

glamorous of sports. So it's nice to see it getting a radical reimagining. Aided by super-slick cinematic presentation, the amusing kung-fu theme sees you taking on a series of oddball opponents. Fortunately, it's not just a cosmetic makeover as the action is spiced up by the inclusion of special moves and power-ups.

While the swipe-based control system is fairly intuitive, it takes a while to learn its nuances and great precision is required to play well. As well as aiming left and right, your timing affects the speed of the shot: hit early for a harder hit. You can also impart spin on the ball by swiping sideways. Fill up your POW meter and unleash a spectacularly special shot to literally stun your opponent.

You also get to unlock paddles and sensei items, as well as upgrade your skills. With a survival mode thrown in, it adds up to a lot of fun.



Shaun the Sheep -Puzzle Putt Build your very own crazy golf course



Fresh from his success on the silver screen, Shaun is relaxing in the same

fashion as many a movie star, on the golf course. Naturally, it's the crazy kind, but the depth of the gameplay may surprise you. Before swinging your putter, you need to partially build a feasible route for the ball to reach the hole. This is achieved by placing various pieces Sadly, the screen sometimes goes black as you pan and zoom, which is not great. On most holes, you're given a limited number of pieces to use; on

on the three-dimensional layout.

On most holes, you're given a limited number of pieces to use; on others, you choose up to three items from a wider selection, which opens up more puzzling possibilities. As well as basic turf blocks and ramps, piece types include cones



The fans will blow a high ball into the sheep who then spits out two more balls

and pumpkins to bounce the ball off, mud to slow it down and fans to blow it along. You can even use foundation stilts to support higher blocks. There are also animals that spit out extra balls, as well as (our personal favourite) tunnel-linked mole holes – putt the ball in one and it'll pop out of another!

With so many options, it can take quite a bit of brainstorming to figure



The course creator lets you build your ow custom holes and then share them

David. Weird, wonderful or both?

The predicted path helps you aim, but it's the course building that's the tricky bit

Already a hit on iOS, David. has finally arrived on Android. It's a curiosity that you'll either love or loathe. Featuring minimalist geometric visuals and an ambient soundtrack, it has a strange style and the gameplay's pretty odd too. Essentially, it's a series of boss battles as you take on... piles of triangles. Upon jumping through one of the stage doors, you'll need to continually make the hero - depicted as a simple square - jump out of the way to avoid contact, while holding and dragging to aim shots at the boss in slow motion as each hit removes a few triangles.

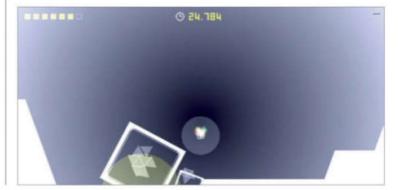
The controls take some getting used to – we recommend the tilt

option – and at first we often found ourselves cornered and crushed, quickly losing all energy. However, once you get the hang of the basic technique to the game, it's quite playable though repetitive.

- » Price £1.56/\$1.99
- >> Designed for Phone and tablet
- » Requires Android 2.3 and up



Hold and drag to target the pile of triangles – it's actually a boss



out what to build. The difficulty curve seemed a bit off with some later holes easily solved while others required convoluted course building. The actual putting part is simple: pull back on the ball to set the speed and direction, you even get a predicted ball path. Despite the flaws, Puzzle Putt is good fun and, with eight different courses, there's enough to keep you busy. In addition, a course creator enables you to build your own wacky courses and share them with friends.

On some holes you're limited to





SAMSUNG

UNKILLED The zombies are back in town



Sheep Stack

Shaun the Sheep -

Use stretchy underpants to catapult sheep onto a stack. Flock-flinging family fun!

Madfinger Games, creator of the Dead Trigger first-person shooter series,

has unleashed a zombie horde on New York City and boy do they look good! Well, good as in the bloodspattered visuals are impressively detailed and smooth.

As Joe, a member of the Wolfpack anti-zombie unit, you're immediately thrust into the fray. Fortunately, the first few stages act as a tutorial and the control system is intuitively simple as, by default, your weapon will auto-fire whenever you aim the crosshairs at a zombie. There are also ample checkpoints between waves of zombies. If you're really

outnumbered, explosive barrels come in handy. Alternatively, you can fire off a one-use weapon, such as a rocket or use an adrenaline syringe to slow down the action, giving you more time to line up headshots.

While primary and secondary weapons can be upgraded or bought in the armoury for chromium currency, special items such as medikits, rockets and adrenaline cost gold - available in IAP bundles, so you need to use them sparingly. It also takes time to level up the weapons required for later stages.



Yikes! It's not a good idea to let the zombies get up close and personal

- » Price Free + IAPs
- » Designed for Phone and tablet
- » Requires Android 4.1 and up

like this? DEAD TRIGGER 2 » More zombie blasting from the same

developer, featuring weekly tournaments.

top games for.. football fans and gamers





Football Manager Handheld 2015 £6.99/\$8.99 + IAPs

Just to be clear, we're talking about English football here and this is our favourite management game out of several very good ones. An even more complex Classic version is also available for high-end tablets.





Combining management and real-time gameplay on the pitch, the latest version of FIFA has it all. The graphics look superb, although the game only works on high-end devices



Flick Kick **Football** £0.99/\$1.99

This old favourite outs you in the boots of a free-kick taker, using swipe gestures to bend the ball around the wall and beat the keeper. Game modes include one where you hit targets





🜉 New Star Soccer Free + IAPs

Another golden oldie, it sees you controlling one pro footballer, taking shots on goal to help your team and advance your own career. Lifestyle elements, such as girlfriends and gambling, add to the realism!





Soccer Stars Free + IAPs

Fans of Subbuteo will appreciate this game as it sees you

flicking your pretend players around a top-down pitch on screen as you compete with friends and participate in online world tournaments.



Android magazine BUYER'S GUIDE

Discover the best smartphones, tablets and accessories to buy in our top ten charts



For the most up-to-date reviews, head to **www.littlegreenrobot.co.uk**THE LATEST ONLINE INCLUDE... SONY XPERIA Z5 COMPACT » NEXUS 6P » KINDLE FIRE

TOP 10 SUPER SMARTPHONES THE BEST FLAGSHIP AND MID-RANGE ANDROID PHONES ON THE MARKET



In case you missed it... Top camera phones Read more in issue 49



Samsung Galaxy K zoom » Price £400

» Website www.samsung.com

Phone-wise it's basically a mini S5, but the photographs it produces are some of the sharpest we've seen, even at full zoom. A great choice.

to design design design



HTC Desire Eye

- » Price £379.95
- » Website www.htc.com

The Desire Eye is a reasonably priced, upper-mid range phone. The front-facing camera is excellent, with a good option on the rear. It's fine for all bar the enthusiast.



LG G3

- » Price £329.95
- » Website www.lg.com

There are a lot of very good points to appreciate. The OIS is fantastic, but LG should have put a little more work into its front camera and the editing tools.



Honor 6

- » Price £209.99
- » Website www.hihonor.com

Excellent camera for quick snaps. It doesn't have the finesse of the others, but it's refreshingly simple, effective and much better than its mid-range competitors.



Buyer's Guide

TOP 10 BUDGET BUYS IF YOU'RE SHOPPING FOR A SMARTPHONE ON A SHOESTRING, CHECK OUT THESE LOW-COST MOBILE MUST-HAVES

101	TO DODOLT DO TO OUT THESE LOW-COST MOBILE MUST-HAVES			
1		Vodafone Smart ultra 6 Our newly crowned best budget phone in the world marries excellent specs and a smooth user experience to topple the ZTE Blade S6 back into second place. We love this phone's octa-core processor, 1080p screen and 2GB RAM – specs you'd expect to see in a premium handset. Throw in the fact it looks good and the cameras work brilliantly, and you've got a serious bargain.	£125 See issue 56	
2	# 0 0 0 # 0 0 0 # 0 0 0 # 0 0 0 # 0 0 0	ZTE Blade S6 While its price puts it at the top end of what we would call a budget phone, the Blade S6 is the best ZTE Blade in years. It runs Android Lollipop, has a 64-bit Snapdragon processor, 2GB RAM and the exact same IMX214 camera as the Sony Xperia Z3 – which costs around three times as much!	From £169.99 See issue 50	
3	LAT TOL	Xiaomi Redmi Note 2 If you're willing to import your device then you can save a lot of money – as Xiaomi's Redmi Note 2 proves. For a stunning price you will get an octa-core processor, 2GB RAM and a lovely 5.5-inch, 401 ppi screen. It's an incredible phone, but it is heavily skinned and hard to get hold off.	From £82 See issue 57	NEW ENTRY
4		Wileyfox Swift The Wileyfox Swift is excellent value for money and good fun too. It matches its rivals in the market with a 5-inch HD screen, 2GB RAM and a five-lens camera enclosure, perfect for taking photos in low light. Cyanogen 12.1 proves to be an authentic alternative to stock Android.	£129 See issue 56	GOING DOWN
5		Moto G (2015) The newly updated third-gen Moto G (2015) model doesn't offer the same metallic finish as the ZTE Blade S6 or Alcatel OneTouch Idol 3, but you can personalise its design before you buy, like you can the much more expensive Moto X. It is also waterproof, offers 4G and has a dual-flash 13MP camera.	£159 See issue 55	GOING DOWN
6		Moto G 4G (2015) Now that the regular Moto G and Moto E have been updated and both offer LTE, this handset doesn't offer much except that it's slightly cheaper than the Moto G (2015). It also looks very similar with a 5-inch screen, booming dual speakers and vanilla Android 5.0.2, but it only offers an 8MP camera.	£139.99 See issue 51	GOING DOWN
7		Moto E (2015) The second-gen Moto E is nipping at the heels of the Moto G for the title of Motorola's ultimate no-strings-attached smartphone. It also offers 4G and has Android Lollipop built in, with the added promise of an all-day battery. But its 5MP camera, bulky size and poor display reflect its budget price.	£109 See issue 54	GOING DOWN
8		Asus ZenFone 5 While it is one of the most expensive phones in our budget buys chart, the ZenFone 5 offers an awful lot for less than most mid-range phones. A stylish metal design is available in a range of colours, it has a sharp 5-inch screen, powerful Intel Atom processor and an 8MP shooter with a range of modes.	£149.99 See issue 48	GOING DOWN
9		Honor 4X The biggest and best of the mid-range Honor phones, the 5.5-inch Honor 4X has a lot going for it, including a 13MP camera, off-brand octa-core processor and 4G connectivity. However, you pay for the high specs at a low cost in other areas: it only runs Android 4.4 KitKat and has a mediocre screen.	£144.99 See issue 53	GOING DOWN
10		Sony Xperia M2 Aqua Just like Sony's flagship Xperia Z5, this mid-range marvel is waterproof up to at least 1.5 metres. Sony's other top feature is here as well with an 8MP rear camera and a suite of photography tools. The only downside is that after you factor in all the preloaded apps, it only has 4GB of storage.	£140 See issue 48	GOING DOWN

In case you missed it... Calendar apps Read more in issue 56



Google Calendar » Price Free



This trusty old stalwart has received a major upgrade with Android Lollipop. It looks

stunning with its cartoon backdrops and icons. The Schedule view is cool too and it syncs well with your Gmail account. All in all, it has just about everything you could wish for.

and and and and

Sunrise Calendar





As well as having a cool Material Design look, Sunrise syncs with lots of other applications

and services. It also comes with its own Meet keyboard to make it far easier to arrange meetings. If you're after a third-party option, this is just about the best out there.

aCalendar

» Price Free



This veteran calendar application is packed with organisational options and comes

with a selection of widgets. The premium plus version also adds numerous extra features such as busy notifications and an improved layout. Definitely worth checking out.

and and and and and

Business Calendar 2

» Price Free + IAPs



Appgenix's app is a very versatile calendar for business users. The new version features

an upgraded interface where you can just long-press a day to quickly view your schedule. There's a nice search facility onboard too, helping to boost your day's productivity.

and and and and and

Buyer's Guide

TOP 10 BEST TABLETS WHETHER YOU'RE LOOKING FOR A SEVEN OR TEN-INCH DISPLAY, THESE ARE THE TOP TABLETS AVAILABLE ON ANDROID

1	100 Est	Sony Xperia Z4 Tablet Sony's lightest and brightest tablet ever, the Z4 has made us fall back in love with the 10-inch tablet when the Nexus 10 left us cold. With a clip-on keyboard and Microsoft apps bundled in, it is a top tablet for when you want to set up a mobile office. But all work and no play makes for a dull device, so the Z4 also supports PlayStation Remote Play and has a crisp 2K display screen, a Snapdragon 810 processor and 3GB RAM to ensure it can keep up with console-quality frame rates.	£499 See issue 54
2	900	Sony Xperia Z3 Tablet Compact If the Xperia Z4 is an iPad killer, the 8-inch Z3 has the iPad mini in its sights. Weighing just 270g, it's slim and stylish like its bigger brother, with 3GB RAM and a Triluminos display to boot. It also integrates with the PS4 so the only real difference between the Z3 Compact and the Z4 is its size and price tag.	£269.99 See issue 46
3	200	Google Nexus 9 A mighty Nvidia Tegra K1 processor and 2GB RAM mean that even running the most graphic-heavy games won't slow this 64-bit tablet down. The built-in BoomSound speakers also offer great sound quality, making Google's new tablet an all-round media consumption device.	£319 See issue 45
4		Samsung Galaxy Tab S 10.5 Ultra thin and ultra bright, colours look vibrant and details distinct on this powerful Super Amoled screen. Samsung's iPad slayer also puts many other Android tablets to shame with a multiwindow mode to display several apps at once and octa-core processor ensuring lightning-fast performance.	£309 See issue 43
5		Sony Xperia Z2 Tablet Arguably one of the most portable 10-inch tablets available, the Xperia Z2 Tablet is waterproof and can support a SIM card for 4G use. It is also surprisingly thin and light to carry, and includes power-saving modes to ensure longer battery life. Reasonably high-spec, it has a whopping 3GB RAM.	£309.95 See issue 39
6	Contract of the Contract of th	Tesco Hudl 2 This sequel to the supermarket chain's own-brand tablet can't compete with premium models, but sets a new benchmark for budget tablets. Upping the display size from 7 to 8.3-inches, the Hudl 2 also runs Android 4.4.2 KitKat and can handle anything you throw at it thanks to an Intel Atom processor.	£99 See issue 44
7	N	Samsung Galaxy TabPRO (8.4, Wi-Fi) The smallest tablet in Samsung's collection, the TabPRO 8.4 proves that good things do come in small packages. A stunning 359ppi screen puts the Nexus 7 to shame, though we'd prefer higher-quality speakers. However, an 8MP camera and an intuitive interface are good compensation.	£199 See issue 38
8		Vodafone Tab Prime 6 Vodafone's 4G tablet is the network's best own-brand device yet, shipping with Android Lollipop built in, a Snapdragon 410 processor and 32GB microSD. Obviously it also requires a Vodafone contract so we recommend buying it outright for £150 and getting the pay as you go deal with 6GB data.	£70 See issue 53
9		Archos 101 Oxygen This wedge-shaped tablet is seemingly tilted to give you a better angle for watching videos, plus a mini-HDMI port to connect it to your TV. But we're not sure why as it has a spacious 10-inch screen of its own with full HD display and good viewing angles. Speedy ARM Cortex A17 CPU is a bonus though.	£169.99 See issue 38
10	1 ***	Amazon Fire HD 6 Despite only having a 6-inch display and a budget-price tag, the Fire HD 6 is a decent tablet for watching movies and listening to music. However, the inferior forked OS and lack of third-party app support make the Fire HD 6 hard to recommended for regular, let alone heavy-duty, use.	£79.99 See issue 46

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DESCRIPTION OF THE STREET OF T

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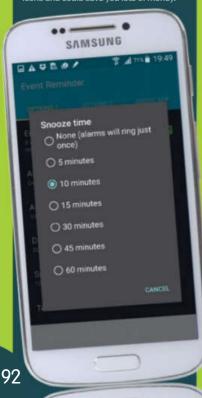






Did you know?

mean that an Android device needs to be thrown away or even fixed. Apps like 'Screen Off and Lock', available from Google Play, have the ability to replicate this button using gestures and screen irons and could save you lots of money.



I keep missing my calendar alerts!

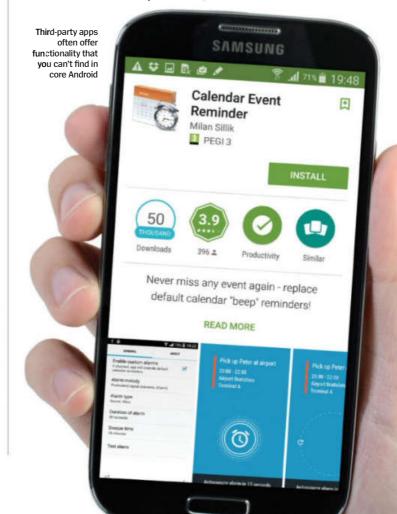
"I love my Galaxy S4, but I'm getting increasingly annoyed that I am missing important calendar alerts. It seems that I can only get one alert per event and if I do not react in good time, it is consigned to the background. Any ideas?"

Roman Richards

Hi Roman. This is a restriction that commonly annoys some users and for which others have no problem at all with. In theory, you should be able to see the alerts as you need, but this doesn't always happen and so we would like to recommend a third-party app called Calendar Event Reminder. It's available for free from the Google Play store and works with your current calendar setup to give you more options than you currently enjoy. Once installed, you can go to the Options 1 tab and make sure that 'Enable custom alarms' is ticked. Now tap Snooze time and then choose any period you'd like, apart from None. What should now happen when an alert sounds in future, is a gradual increase in volume that will then stop if you do not react at all. The snooze time you choose is then used to sound the alert again and it will continue doing so until you physically interact with your phone or tablet. It completely solves your problem and only needs to be set up once, plus you get a whole host of other useful options that you can

Your device can now bug you until you physically respond to your notifications

tweak to make your calendar as useful as you need it to be. The default in the Options 2 two tab is for the 'Max number of snooze' limit to be set to No limit, but please check it anyway. Hopefully you will never miss an alert again, but don't forget to still respond in good time to alerts.



Ask your questions >> facebook >> email

Got a problem with your Android phone or tablet? Send it to us and we'll find the solution



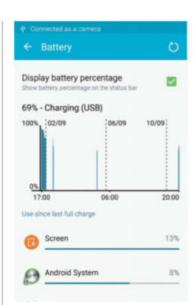


Why can't I fast charge my Android phone?

"My phone is supposed to support fast charging, but it seems to charge at different speeds, even during the same cycle and I am convinced it takes a lot longer than it should. Is there anything I can do to speed it up?" Jessica Hayes

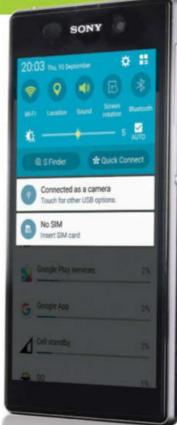
Hi Jessica. The first thing we suggest is that if you're generally happy with the speed at which your phone charges then it may be best not to worry, but some things may help address your concerns. Fast charging will work exceptionally well up to a certain percentage, usually between 60% and 70%. At this point it slows down because fast charging all the way to 100% can physically damage the battery. This is why you'll see differences in performance, in particular when you're trying to charge a phone that already has a decent

level of charge. You should also make sure that the charger you are using supports fast charging and that it is connected to a power outlet, not a USB port. If you are concerned that the fast charger isn't working as it should, borrow another one to check if your charger is broken. There are other things you can do to speed up charging that include entering Airplane mode and turning the screen off. The less power the device is consuming, the quicker it will charge, but you should be able to expect a full day of usage, at which point you can charge it



Fast charging usually works, but not all the way to 100%

overnight at any speed. Fast charging is designed to work when needed, but there are very specific and sensible reasons why it does not enable itself all of the time when charging.



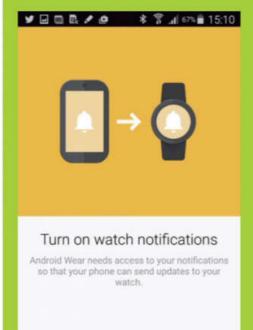
There are some tricks you can use to speed up charging your device

Common Section Section 100 Get more from your Android Wear watch with our handy hints

Extend Android Wear battery

There are a few options you can try to extend the battery life of an Android Wear watch, such as turning off Wi-Fi, disabling auto-brightness and the ambient function.

These should help you easily get through a day.



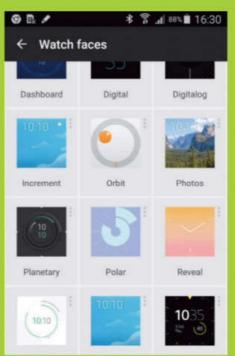
Expect some compromises

When you start using your Android phone with an Android Wear watch, you should expect some changes to how your phone works: noticeably less battery life and at times a slower performance.



Limit the watch faces

Try not to install too many watch faces that you will not use. Ideally you should find a small selection that you will use often, then leave only those installed to save battery life and free up space.



DroidSupport

Why can't I send GIFs?

Hi. Every time I send an animated GIF to a friend using Hangouts, it arrives as a still image. Strangely, it animates on my side and displays properly when I view it, but the recipients never see them.

Matt Corman

Hi Matt. This is actually a common problem that many users complain about, but curiously some have no problem at all with. It is difficult to know at this stage as to whether it is a problem with the software build and/or the carrier a phone is being used on, but we have found a solution that should work. You can download a third-party app from Google Play called Textra



SMS, which is designed to work as a full solution for all of your messaging needs. It looks fantastic, much better than most default Android apps in our opinion and it works perfectly with animated GIFs. We have tested it time and time again, and so far have not seen any failures at all. Try it and let us know if it resolves the problem for you.

My phone lags after an OS update?

I recently updated my Galaxy phone and now it is incredibly slow. I have turned it off and on multiple times, but it remains very slow and at times slows to a crawl. Is there any way for me to completely reverse the update or can I try something else? Gary Edwards

Hi Gary. It is hard to know what exactly is causing this because each device is set up differently before an update is applied. Some phones and tablets that have few third-party apps installed tend to accommodate updates easily, but heavily customised devices may have problems. Fortunately there is one trick you can try to wipe the cache partition without losing any data. Start by turning your phone off and then press and hold the power button, volume up and home buttons all at the same time. Release these as soon as you see some writing on the screen as a recovery menu appears. You can use the volume up and down keys to navigate through the list until you find 'wipe cache partition' or 'wipe cache'. Now press the power key when it is highlighted and the process will start. You shouldn't lose any data at all and we are fairly certain that it will make your device a lot faster straight away. If it

does not, you will likely need

to try a full reset.

Update now
Last checked on: 10/09/2015

Auto update
Check for updates automatically.

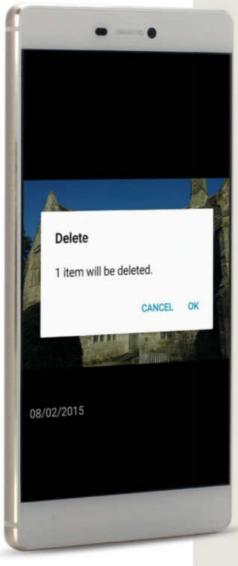
Wi-Fi only
Only download updates when connected to a Wi-Fi
Instruct.

You can make OS updates pain free

Software updates

Can I recover my recently deleted photos?

I accidentally deleted a lot of pictures from my Nexus 7, 2nd generation. What is the best way to go about retrieving them? I haven't put any more pictures or music on this device as I am aware it can overwrite any possible recovery. I have been viewing my emails on this device for that last two months since it happened. I hope this won't affect the possible recovery of the pictures. *Ciaran Smyth*



Hi Ciaran. Sadly, it is impossible for us to know for sure if you can recover your deleted photos because every device, every expansion card and every usage pattern is different, but with a bit of luck our step-by-step instructions may enable you to retrieve everything. You have done the right thing by not saving any more images because the sectors can easily be overwritten, but it is also possible that sectors could be used by other apps and media if space is tight. For this to work, you will need to use a Windows or Mac computer and you will also need to make sure that your Nexus can connect successfully to it using the USB-sync cable, but if you have got that far then you have nothing to lose by trying this potential fix. We do hope that you will be successful so please let us know how well it works.

It is in fact quite straightforward to recover deleted photos

GIFs won't send



Did you know?

As a general rule, try to avoid installing beta software on your main Android device. You should be fairly safe with beta apps listed in Google Play, but remember that a beta version may contain bugs that could affect the reliability of your Android phone or tablet.

Allow USB debugging? USB debugging is intended for development purposes only. It R can be used to copy data between your computer and your device, install applications on your device without notification, and read log data. CANCEL

Enable USB debugging First go to Settings and the About option.

Tap it and then tap the Build number option seven times to enable Developer options. You should now find USB debugging and tap the tick box to enable it. This is required to give your PC access to the files on your device or expansion card.



Start the recovery scan Make sure you are happy that your device is connected to your computer and click the large Start Scan button. You will also see two further images at the top to Resume Recovery and Create Image, but you will not need either of these to run your very first scan.



Deleted photo previews As the scan progresses, you will see previews of some of the images appear in the top window. Full statistics will be shown in real time and you will see any recoverable photos listed at the bottom. Wait until the scan has completed before you proceed further or click any icons.



Connect and install

Search online for a desktop app called 'Stellar Phoenix Photo Recovery' and install the trial version. You will need to register it to actually recover photos, but you can try it first to see what deleted photos it finds in order give you some confidence in how the software works.



Choose directory

Make sure you select either your Android device, if it is connected, or the expansion card that you deleted your photos from. You now have to click Start Scan again, which may seem a little strange, but that is how it works. Expect the scan to take a while with larger cards.



Select some photos

When the scan has finished, select any or all of the photos that you wish to recover and then click the Recover icon. It may not work every single time, but if you can recover some valuable photos then the entire process will be worthwhile because it is quick and efficient.

Andro

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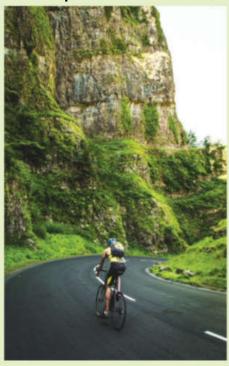
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